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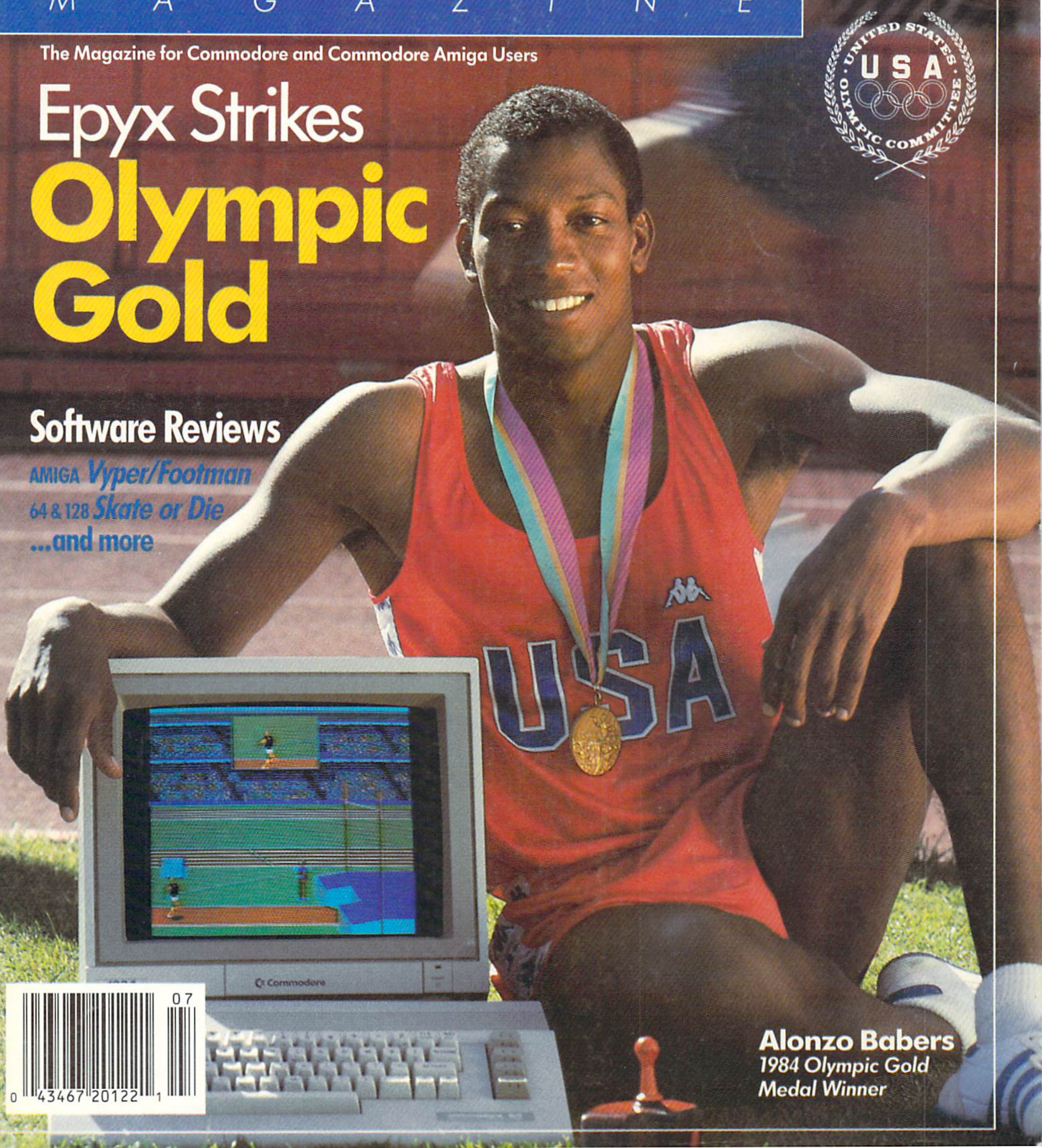
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The Magazine for Commodore and Commodore Amiga Users

Epyx Strikes Olympic Gold

Software Reviews
AMIGA *Vyper/Footman*
64 & 128 *Skate or Die*
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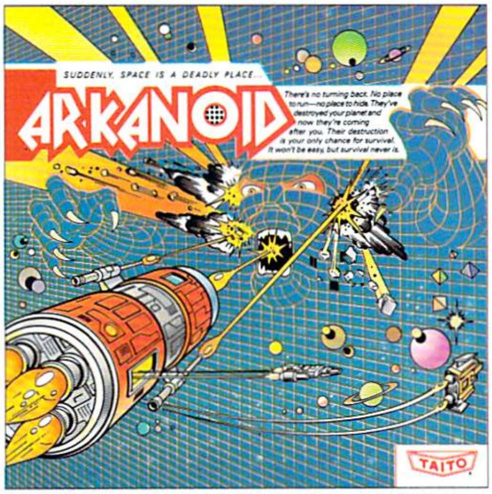


Alonzo Babers
1984 Olympic Gold Medal Winner

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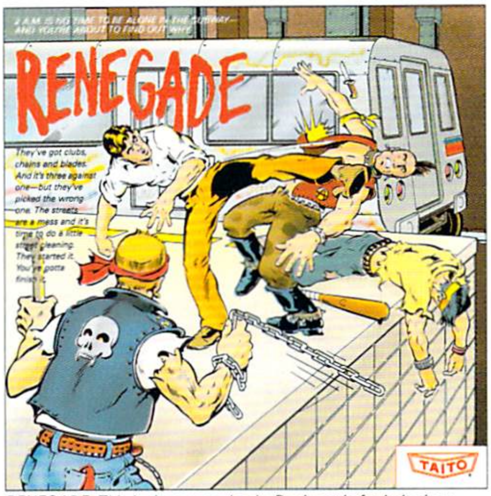
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Commodore
MAGAZINE

JULY 1988, *Volume 9, Number 7*



54



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FEATURES

COVER STORY

COVER PHOTO: David Madison
Software: *The Games: Summer Edition* by Epyx
Alonzo Babers appears with the approval of
The Athletics Congress of the USA.
Authorized by the U.S. Olympic Committee.

DEPARTMENTS

Commodore
MAGAZINE

To the Editor:

This is an open letter (re: "Taking Computer Flight to New Heights," January 1988) to John Jermaine, Ned Lerner, et al., from an ex-military and current civilian pilot and flight instructor. Chuck Yeager is undoubtedly the world's greatest living test pilot. Lindberg, Yeager, Bob Hoover and John Young have been, and are, my heros.

Now the gist of the matter. There is no flight simulator program on the market, including SubLogic's, that gives realistic proportional control—a direct relationship between control input and aircraft reaction. My question is WHY? The C64 has pot inputs that feed an AD converter. The Radio Control Hobby has had proportional joysticks for years that would be ideal for this. (Just change the 6K pots for 500K pots.) For about the same price as a "digital" joystick, you can have a proportional, realistic control.

Not only does Lerner, et al., ignore this advantage, they encrypt the code to make it difficult for anyone else to make a real simulator out [of] their programs.

One question: has the General really flown the *Advanced Flight Simulator* on the 64? If so, what were his comments regarding the lack of pitch down on power cuts in the prop planes and tail-tuck on the jets on power cuts, lack of immediate deceleration on power cuts, no constant rate turns except in a 90-degree bank, no roll or pitch instability in power on or off stalls, no spins unless you pull the wings off?

Frank T. Cox
Austin, TX

Electronic Arts' Response:

During development of Chuck Yeager's *Advanced Flight Trainer* we used a proportional control. It was nice, and all other versions of *AFT* (Apple II, IBM, Tandy) have proportional control as well. For the Commodore 64 version we had to make some tough decisions to shrink the simulation from 256K on the IBM to 64K on the C64. We didn't know anyone else who had a proportional control device so we took the feature out to make room for other goodies. I regret it is difficult for you to put this feature in for yourself.

Chuck Yeager developed and test flew the original version of the simulation. I did the programming for both the IBM and C64 versions. General Yeager left it in my hands to make sure the C64 version is the most carefully constructed of all the versions of *AFT*. Even so, it is not the same as a multi-million dollar simulator. Some of the million dollar simulators I've flown can't do everything you and other people have asked for. And no million dollar simulator has Chuck Yeager teaching you how to fly, the SR-71, death defying races or many of the other features we've added.

Your letter shows that you have spent a lot of time and effort flying *AFT*. Thanks for writing.

Edward Lerner
Developer of AFT
Electronic Arts

To the Editor:

As a software developer, I am very much aware of the large amount of pirated software floating around. Most of it is known by the end user as illegal but is used anyway. I wrote, packaged, advertised and distributed a program called *Dominoes*. Some people knowingly, and some unknowingly, archived and uploaded it to various bulletin boards. I have been trying to notify the BBSs that *Dominoes* is a commercial product, but there are many boards. I was very distressed to see *Dominoes* listed in your magazine in "Amiga Public Domain Update" by Graham Kinsey. Although I realize that you are not actually distributing the program, this does not help in slowing down people who are.

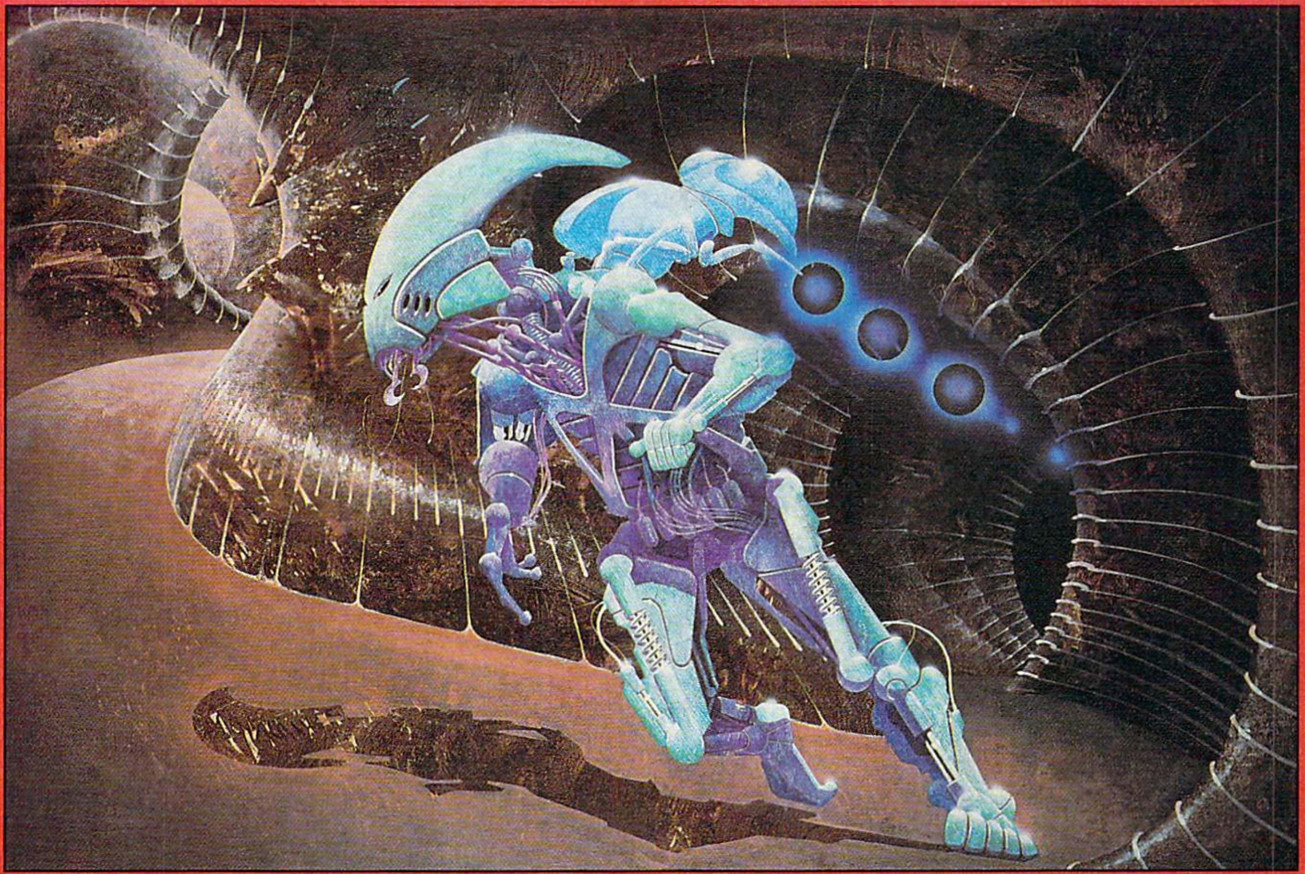
Sincerely,
Brian Moats
Polyglot Software
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Boise, ID 83704

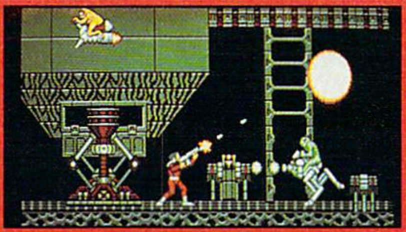
Editor's Response: *We apologize for inadvertently indicating in our February issue that* Dominoes *was in the public domain. It was not our intention to condone or contribute to the piracy of your program, and we encourage our readers to contact you directly to obtain a legitimate copy of* Dominoes.

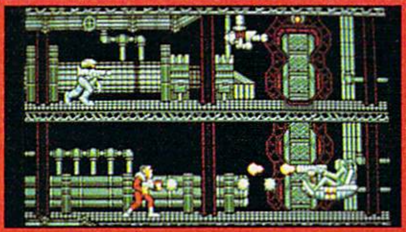
Correction: There is a correction necessary to the schematic of the Digital Camera project as published in the January 1988 issue of *Commodore Magazine.* The battery, B2, in the bipolar power supply schematic is shown backwards. Battery B2 should have the negative end connected through R4 to Pin 1 of the camera chip. John Iovine was able to contact Images (the camera chip supplier) and had them send out a note to all the readers who purchased the D-CAM chip.

Commodore Magazine, Volume 9, Number 7, July 1988.
Commodore Magazine is published monthly by Commodore Magazine Inc., 1200 Wilson Drive, West Chester, PA 19380. U.S.A. U.S. subscriber rate is $35.40 per year; Canadian subscriber rate is $45.40 per year; Overseas subscriber rate is $65.00 per year. Questions concerning subscription should be directed to Commodore Magazine Subscription Department, Box 651, Holmes, Pennsylvania 19043. Phone (800) 345-8112. In Pennsylvania (800) 662-2444.

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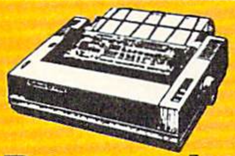
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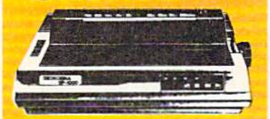
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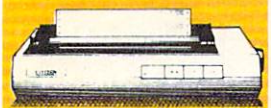
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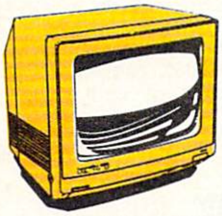


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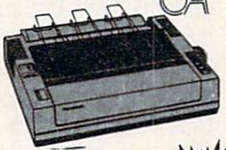
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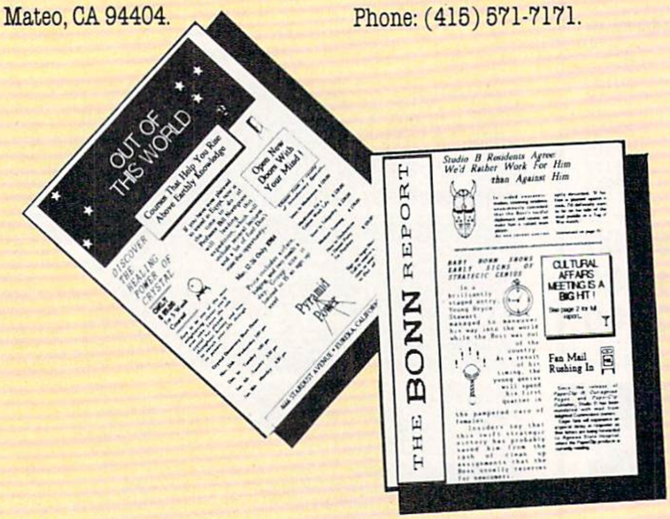
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PaperClip Publisher

Electronic Arts has released **PaperClip Publisher** for the Commodore 64. The program allows users to publish multiple-column newsletters, flyers, menus, resumes, and price lists of up to 50 pages. You can also import text, graphics and fonts from most popular Commodore 64 programs. **PaperClip Publisher** retails for $49.95. For details contact: Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. Phone: (415) 571-7171.



Tetris and ZIG ZAG

Spectrum Holobyte has released two new titles in its International Series. The first entertainment software to reach the west from the Soviet Union is **Tetris** for the Commodore 64. Designed and programmed by Soviet computer experts, **Tetris** is the "Rubik's cube" of software games. The player needs quick reflexes to rotate and manipulate four squares that make up different shapes as they descend from the top of the screen. **Tetris** retails for $24.95.

ZIG ZAG represents the United Kingdom in Spectrum Holobyte's series. In **ZIG ZAG** the player maneuvers his star fighter through narrow passageways while trying to avoid disappearing barriers, traps and timelocks. Suggested retail price is $24.95. For details contact: Spectrum Holobyte, 2061 Challenger Dr., Alameda, CA 94501. Or call: (415) 522-3584.

Ebonstar

Ebonstar from MicroIllusions is a gladiator space competition for the Amiga. You and your opponents (up to four players) try to hurl each other into a synthetic black hole while evading obstacles exploding on the game field. Suggested retail price of **Ebonstar** is $39.95. For details contact: MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344. Phone: (800) 522-2041.

C Ltd. to "Fill the Gap"

C Ltd. has joined with several software manufacturers to "fill the gaps that have, until now, kept the Amiga out of the small business market." New product releases will include a networkable SCSI-based 300 dpi laser printer for under $2500, a networkable SCSI-based 300 dpi page scanner for $1500, and a Zorro bus-based 9600 baud modem card with FAX transmission capabilities for under $600. A new hardware controller will allow multiple user access to the laser printer and scanner as well as other SCSI devices.

Software developers involved in the project include: General Computer Corp., Waltham, MA; SoftLogic Corp., St. Louis, MO; Professional Automated Resources (PAR) Software, Inc., Vancouver, WA; Avant-Garde Software, Plano, TX; Associated Computer Services Software Division, Springfield, MO; and Soft Circuits, Boca Raton, FL.

For more information contact: C Ltd., 723 E. Skinner, Wichita, KS 67211. Phone: (316) 267-6322.

Station Manager

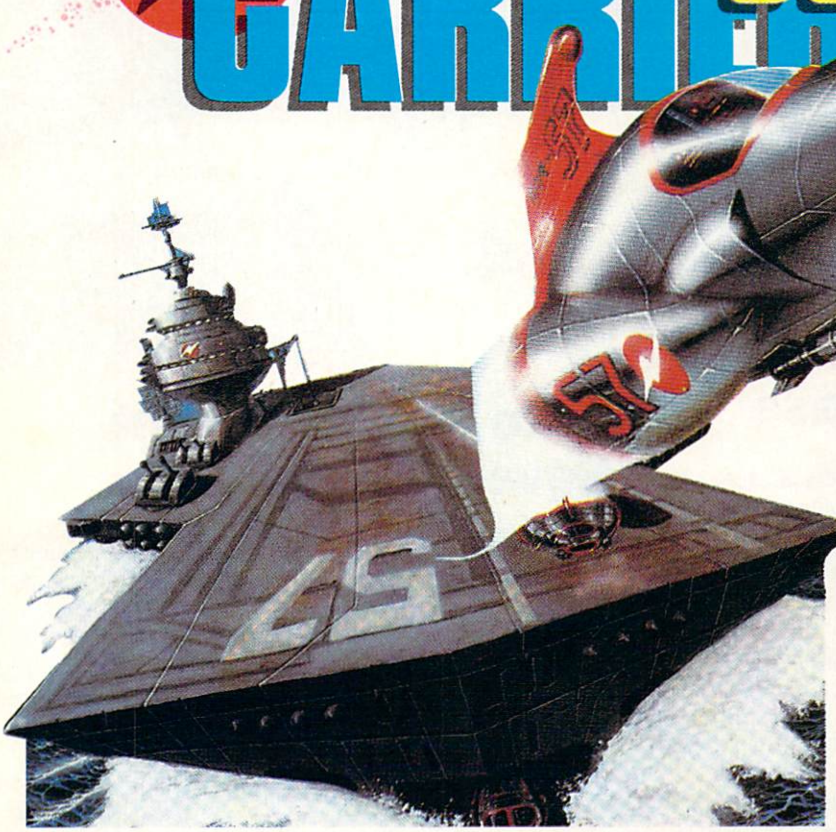
At the National Association of Broadcasters' convention in April, Associated Computer Services (ACS) unveiled a complete and affordable Amiga-based video graphics system for medium-market broadcasters, cable operators and production houses. For as little as $3000 (hardware included) **Station Manager** offers video graphics capabilities comparable to systems costing $40,000 or more.

The module includes: *DeluxeProductions,* graphics animation software; *Weather Graphics Map Generator* for creating weather map graphics anywhere on earth; *Weather Graphics Weather-Link,* which downloads maps and data from weather services like Accu-Weather; a Graphics Library; a Character Generator and a Teleprompter. For more information contact: Associated Computer Services, 1306 E. Sunshine, Springfield, MO 65804. Or call: (417) 887-7373.

DeluxeProductions

Even if you don't own your own television station you may want to use **DeluxeProductions,** developed by Associated Computer Services for Electronic Arts to generate business or educational presentations with your Amiga. **DeluxeProductions** allows the user to work in overscan and chain productions together to create long or looped presentations. Forty different special effects are available and three art disks are included. For more information contact: Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. Phone: (415) 571-7171.

CARRIER COMMAND



BRUTE FORCE

In the 22nd century, the Aircraft Carrier does more than launch planes. At close range or miles away, its ability to inflict damage is staggering.

Breakthrough propulsion systems put its top speed at over 60 knots. Space age defense and 360-degree turret mounted laser cannons make it virtually invincible.

From the bridge of the future you control the ship itself, a squadron of remote fighters, an amphibious assault division, and a huge array of onboard weapons systems.

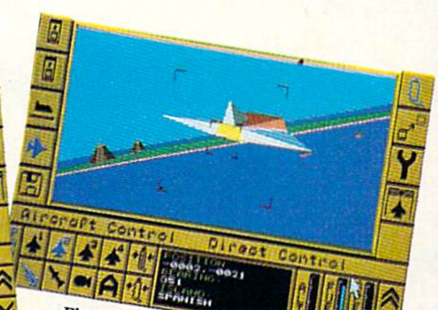
- Protect your ship with defense drones and 360-degree turret-mounted laser cannon with telephoto tracking.
- Conduct your war maneuvers in a huge territory that includes 64 islands. Your goal is to capture the enemy complex and destroy its forces.
- Take on the enemy carrier, run a gauntlet of missiles and confront futuristic naval threats.
- Dispatch the amphibious assault division to establish beachheads, capture airstrips and missile silos.
- 3D solid-filled graphics, smooth scrolling land and sea-scapes, and great sounds and special effects.

Carrier Command. A step ahead of simulations.

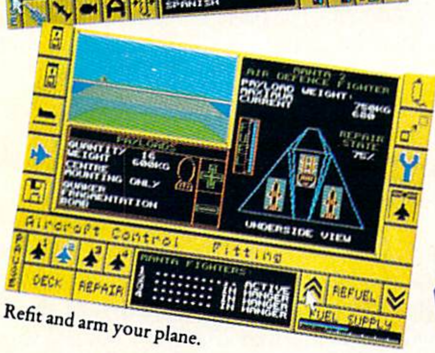
Available now on Atari ST. Coming soon on Amiga, C64, Mac and IBM.

Assault Carrier brought into view.

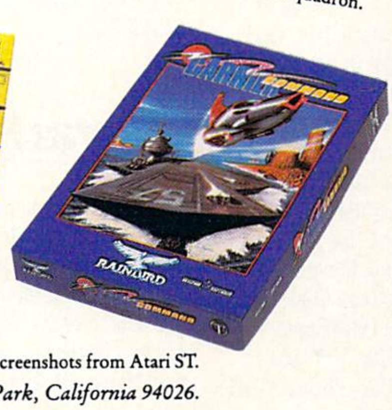




Fly behind the lead fighter of the squadron.



Refit and arm your plane.



Screenshots from Atari ST.

Telecom Soft, P.O. Box 2227, Menlo Park, California 94026.

REALTIME GAMES SOFTWARE LIMITED

RAINBIRD

A-Drum

Haitex Resources has introduced **A-Drum**, a full-featured rhythm maker for the Amiga. The four-voice drum machine is capable of stereo output using sound samples loaded from disk in IFF format. **A-Drum** can accommodate up to 26 sounds in memory at once (depending on available memory), and any parameter of each sound can be altered. **A-Drum** retails for $79.95. For more information contact: Haitex Resources, 208 Carrollton Park, Suite 1207, Carrollton, TX 75006. Or call: (214) 241-8030.

Quick Brown Box

Brown Boxes, Inc. has released a series of **Quick Brown Boxes** for the Commodore 64 and 128. The battery-backed cartridges come in 8K, 16K, 32K and 64K into which you can write or load programs, games, utilities or data for almost instant access. Even when the computer is turned off or the cartridge is unplugged, the data you store will remain intact. No programming knowledge is necessary to use **Quick Brown Boxes.** List prices are: 8K $39, 16K $69, 32K $99, and 64K $129. A 30-day money back guarantee and one-year repair/replacement warranty are included. For further information contact: Brown Boxes, Inc., 26 Concord Rd., Bedford, MA 01730. Or call: (617) 275-0090.

Crazy Cars

Titus Software Corporation's new Amiga release, **Crazy Cars,** lets you test your driving skill in four prestigious automobiles. Players can choose a Mercedes 560 SEC, Porsche 911 Turbo, Lamborghini Countach and Ferrari GTO on six different courses. For more information contact the distributor: Micro P Technologies, 24 Yawl St., Suite 2, Marina Del Rey, CA 90292. Phone: (213) 823-1622.

TAB Books Release

Advanced Commodore 128 Graphics and Sound Programming by Stan Krute is now available from TAB Books. Stan Krute is also the author of TAB's best-selling *Commodore 64/128 Graphics and Sound Programming.* This 400-page volume provides the tools for solving any sound or graphics programming challenge that a 128 user might encounter. The paperback version is available for $15.60, the hardbound version for $21.95. For more information contact: TAB Books, Inc., P.O. Box 40, Blue Ridge Summit, PA 17214. Phone: (717) 794-2191.

Happy Spell, Happy Math

Shannon Software, Inc. has combined **Happy Spell** and **Happy Math** on a single program disk. The programs, for children ages three through seven, teach the basics of spelling and addition. Available for both home and school, the program retails for $22.95. For more information contact: Shannon Software, Inc., 11926 Santa Monica Blvd., Suite 117, Los Angeles, CA 90025. Phone: (213) 822-1138.



Pete Rose Pennant Fever

Activision has announced a new release for the Commodore 64 in its Gamestar line: **Pete Rose Pennant Fever.** Players will have to give 110% in the "Charlie Hustle" tradition to guide their expansion team through a ten-season, 24-team-league race for the Pennant. The game enables players to pitch, hit, run, field, throw and steal to the accompaniment of digitized sounds and graphics. In addition you as act as manager, calling pitches and plays and as general manager by drafting and trading players. **Pete Rose Pennant Fever** is scheduled for a November release. For more information contact: Activision/Gamestar, 2350 Bayshore Pkwy., Mountain View, CA 94043. Or call: (415) 960-0410.

Under Fire!

The Avalon Hill Game Company has released a WWII infantry combat simulation for the Commodore 64. **Under Fire!** puts the user in charge of paratroops, engineers, mountain troops, tanks and assorted artillery. The program incorporates nine scenarios and a construction set that allows the user to determine weather, scale, general orders and victory conditions. Suggested retail price is $34.95. For further information contact: The Avalon Hill Game Company, 4517 Harford Rd., Baltimore, MD 21214. Phone: (301) 254-9200.

Ferrari Formula One

Electronic Arts puts you behind the wheel of a $350,000 Ferrari F1/86 in **Ferrari Formula One.** The Amiga simulation, which is the second release in their Sports Legends line, features high-speed action on 16 international racecourses. The driver can also choose the length of the race and weather conditions. The program retails for $49.95. For details contact: Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. Or call: (415) 571-7171.


THE NAME OF THE GAME IS SURVIVAL.
PLATOON™
In Vietnam, an American soldier soon learned that there were no winners in this deadly game. To survive each mission with his morale and sanity intact, and return to base safely, was all he could hope for. This was captured in the award-winning film, Platoon.
In Data East's Platoon, you will experience the full impact of the film as you lead your platoon into the jungles, villages, bunkers, foxholes, and underground tunnels of war-torn Southeast Asia.
There you will encounter guerilla fighters, snipers, booby-trapped trip wires, armed patrols, and napalm air strikes. You must pick up food, medical supplies, and ammunition along the way.
At times, the odds may seem insurmountable. But don't think about winning – to survive is enough.
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DATA EAST
DATA EAST USA, INC.
470 NEEDLES DR., SAN JOSE, CA 95112. (408) 286-7074.
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Aegis Video Contest

Aegis Development has announced their second annual Desktop Video Contest open to all Amiga owners who use one or more Aegis products to create an original video. Winners will receive prizes ranging from an Amiga 2000 computer system to gift certificates. Contestants may enter as many 1/2" videos (no longer than five minutes) as they want by September 1, 1988.

The two categories (amateur and professional) will be judged by video professionals not associated with Aegis on animation, special effects, computer and software use, artwork, creativity, editing, story line, sound and overall quality and ingenuity.

Winners will be announced in September, and an awards ceremony will be held at COMDEX in November in Las Vegas, NV. Entry forms can by obtained at your local Amiga dealer or from: Aegis Development, Inc., 2115 Pico Blvd., Santa Monica, CA 90405.

SoundWare Releases

SoundWare has released several budget-priced music programs for the Commodore 64: **Passport Sequence Editor** ($14.95) allows step-editing of the MIDI 4+ and MIDI 8+ sequence files. The **Studio One Editor** ($14.95) is for use with Syntech's popular **Studio One** program. **DX21/27/100 Librarian** ($14.95) stores banks and individual voices from Yamaha's 4-operator FM synthesizers. **Juno 106 Librarian** ($14.95) stores 128 sounds in memory and includes a random patch generator. The **Generic Librarian** ($19.95) is a 32K System Exclusive recorder that works with any instrument capable of bulk Sys-Ex dumps. For more information on these programs contact: SoundWare, P.O. Box 1913, Nederland, TX 77627.

Monster Power and More

Free Spirit Software, Inc. has introduced three new games for the Commodore 64. **Monster Power** is an arcade game for one to four players which simulates tractor pulls, mud bogs, and monster truck competitions. **Monster Power** retails for $14.95.

Strategic Playground Football simulates playground-style football for one or two players and sells for $9.95. **Universal Robots** is a strategy simulation in which the player takes control of manufacturing in a futuristic robot factory. The program has a suggested retail price of $9.95. For more information contact: Free Spirit Software, Inc., 905 W. Hillgrove, Suite 6, La Grange, IL 60525. Phone: (800) 552-6777.

Survey-Master

Strategic Marketing Resources has introduced **Survey-Master** for the Commodore 64. The program is designed to tabulate answers to market research or survey questionnaires and provide a printed report summarizing the data obtained. **Survey-Master** calculates averages, standard deviation, standard error and confidence level. For details contact: Strategic Marketing Resources, Inc., P.O. Box 2183, Ellisville, MO 63011. Or call: (314) 256-7814.

Accolade Moves

Accolade, Inc., publisher of many popular entertainment titles for Commodore computers, has relocated to larger offices. After reporting record profits for the first quarter of 1988, Accolade has doubled their office space by moving to a 12,000 square-foot facility at: 550 S. Winchester Blvd., San Jose, CA 95128. Their new office phone number is: (408) 985-1700. Customer service can be reached at: (408) 296-8400.

Alien Destruction Set

Now available from Scorpion, **Alien Destruction Set** challenges arcade game players with four unique adventures in space. Different missions require varying skills such as quick puzzle-solving logic or fast space-combat reflexes. Available for the Commodore 64, the suggested retail price for **Alien Destruction Set** is $29.95. For more information contact: Scorpion, 19 Harbor Drive, Lake Hopatcong, NJ 07849. Phone: (201) 663-0202.





Lou Sander's Tips & Tricks

Compiled by Louis F. Sander

I get many requests for simple material on programming. This month, we're catering to the readers who have made that request. By recapping some computer history and by presenting some of my own ideas on learning BASIC, we'll try to make programming more accessible to those who may never have tried it.

This month's programs are in plain vanilla BASIC and should be easy for beginners to follow. (The whole column has only one PEEK and one SYS!) Our lone machine language offering includes an assembly listing for ML beginners to pore over.

If you have an interesting item of your own, either simple or complex, why not write it up and send it in? If it's chosen for publication, you'll get at least $10, plus a lot of pride and fame. Send your ideas, one per sheet, please, to:

Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237

Burrow: In personal computing's early days, much emphasis was placed on one-line programs. Not only did they use little memory (when 8K was thought to be a lot), but they also showed programmer's virtuosity in a very restricted format.

Back in 1978, (when you could buy an 8K PET for $795), this active and amusing program appeared in *The PET Gazette,* one of the earliest newsletters for Commodore owners. Over the years it has been used and reprinted by hundreds of user groups. Type it in and try it—the little critter hasn't grown stale with age.
Louis F. Sander

```
1 A$="[UP,DOWN,LEFT,RIGHT]"
  :PRINT MID$(A$,RND(.5)*4+1,1);"*
  [LEFT]";:FOR J=1 TO 30:NEXT
  :PRINT"[RVS] [LEFT]";:GOTO 1
```

Batting Averages: Baseball and softball are back, so batting averages are again a topic of interest. Tell this program a player's at bats and number of hits, and it will tell you his or her average. Can you figure out line 50?

As it stands, the program is a bit more sophisticated than the previous one. You might also want to add printer output, or make it respond properly if "YES" is entered instead of "Y."
Shane Clark
Winchester, IN

```
10 PRINT"[CLEAR,SPACE5]
20 PRINT
30 INPUT"HOW MANY TIMES AT BAT";AB
40 INPUT"[SPACE8]HOW MANY HITS";H
50 AV=INT(1000*(H/AB)+.5)/1000
60 PRINT"[SPACE4]BATTING AVERAGE =";AV
70 PRINT
80 INPUT" FIGURE ANOTHER (Y/N)";A$
90 IF A$="Y" OR A$="[SHFT Y]" THEN 20
```

Fahrenheit to Celsius: Here's a handy science utility that will convert any Fahrenheit temperature to the more standard Celsius form. Be prepared for some long answers, since the conversion will be made to the ten millionth's place on some numbers.

Although the program is user friendly, it's rather unsophisticated. You might want to experiment with features like looping (for more temperatures) or reverse conversion from Celsius to Fahrenheit.

It's always wise to do exhaustive testing with programs that do calculations. (How else will you know if the answers are right?) For temperature converters, I like to use 32, 212 and -40 degrees Fahrenheit, which nicely convert to 0, 100 and -40 degrees Celsius.
Brett Meyer
Rota, Spain

```
30 INPUT"TEMP IN DEGREES FAHRENHEIT";
   TF
40 TC=5/9*(TF-32)
50 PRINT
60 PRINT" THE CELSIUS TEMPERATURE IS";
   TC
```

The way we were: In the early days of personal computing, every computer owner needed to program. Since commercial software was nonexistent, if you wanted your system to do something, you had to program it yourself.

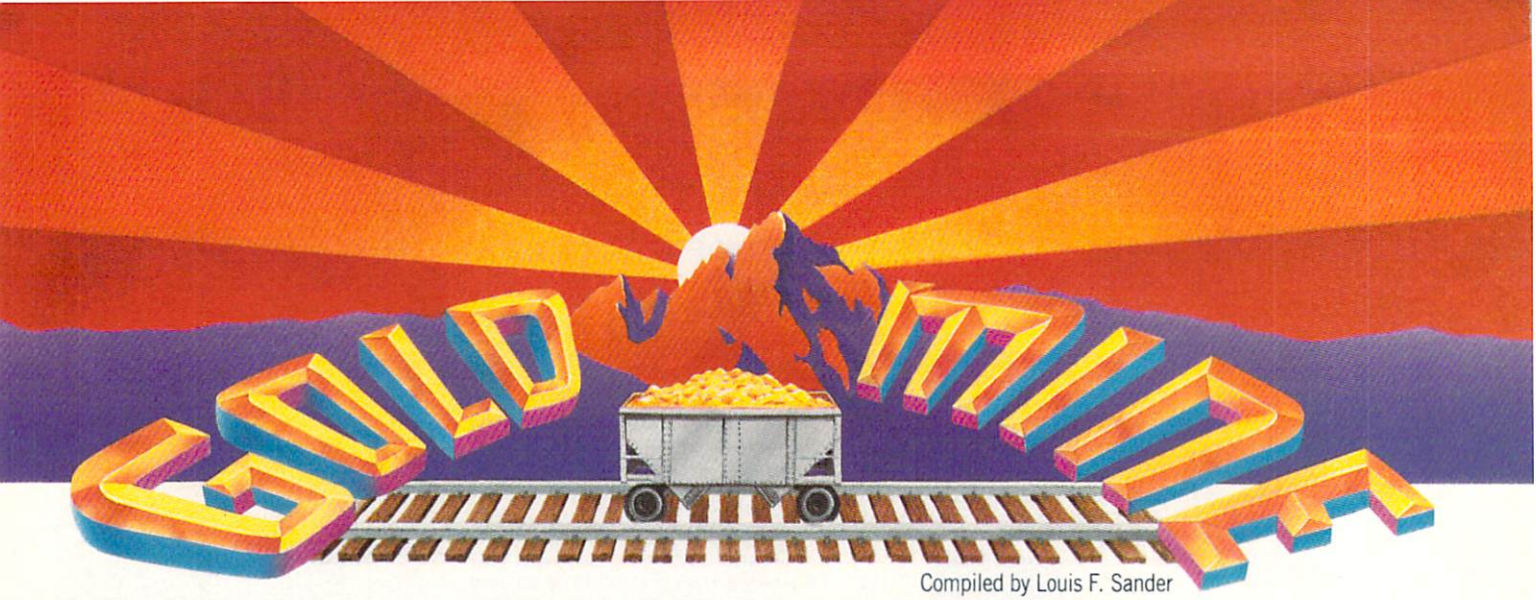
There were very few books on programming and almost no courses or magazines, so most of us became self-made men, at least where programming was concerned.

Everyone learned BASIC right away, usually from a book featuring timesharing versions of the language, with nothing like the flexibility of the Commodore dialect. Each month the newsletters revealed new wonders of Commodore BASIC, and we waited for every issue to expand our computer horizons.

In those days a newly-discovered PEEK or POKE was cause for international excitement, as programmers around the world incorporated it into their creations.

As our collective knowledge advanced, BASIC no longer satisfied our need for increasingly better programs. Many of us got a monitor program and began wrestling with machine language.

Continued on page 101



Compiled by Louis F. Sander

If you have nuggets of your own to contribute, write them up and send them in. Successful contributors will get real and rewarding fame, plus a grubstake of $5 upward.

Each submission should combine all the tips for one game, and your name and full address must be printed on every sheet of paper. Mail your nuggets to:

The Gold Mine
P.O. Box 101011
Pittsburgh, PA 15237

Aliens: When fighting the alien queen, keep her to one side and keep hitting her to diminish her energy. Ramming her into the sides of the screen is a good tactic. When the bar at the bottom is fully green, put your power-loader arms to the opposite side from the queen. Wait for her go get close to you, then put the arms under her, push up, at the same time pushing and holding the joystick button. Wait for the airlock to open, then release the button, and it's Good-bye, Queenie!

Also, if you cannot make it to the last screen, type "ABCDE" at the Enter Code screen. When you defeat the queen, you'll be able to see all the picture screens.

Nathan Jones
Baltimore, MD

AutoDuel: To get an infinite amount of money, buy a car and put everything on it until your money and weight have all question marks next to them. Save the game. When you load it again, you'll have an infinite amount of money.

The IRS will fine you for your first couple of moves. Don't worry, because they'll quickly stop harassing you.

Ron Garrison
Hatfield, PA

The Bard's Tale II: Although the Dream Spell can be used to get to the entry of any dungeon, it's also helpful during combat, where:

1. It acts like an advanced Heal All spell, even resurrecting stoned characters.
2. It acts like a Mangar's Mallet spell.
3. It gives each character eight additional attacks.
4. It lowers the party's armor class to L+.

Nick Karfonta
Pinckney, MI

The Bard's Tale II: If you're going door to door looking for the Maze of Dread, look no further. It's in the NE section of Thessalonica, in the fourth house on the right.

To go in the Desting Stone without using the Dream Spell (ZZGO), not to mention wasting 100 spell points, just go to the Strange Mage in the NW corner of Colosse and say "freeze please."

Khoa Nguyen
Philadelphia, PA

Black Hawk: To get any number of lives from 0 to 255, type this after you load the game (N is the number of lives you want):

POKE 8290,N <RETURN> To get to any level N from 0 to 255 type:

POKE 8294,N <RETURN> To start the game type:

SYS 8192 <RETURN>

Juan J. Rodriguez
Abington, PA

Bruce Lee: To get past the last screen, just push the joystick to the right. Don't stop for the fireballs, because they can't hit you.

Cheuk Chau
Address Unknown

Championship Soccer: If you have trouble beating the computer at higher levels, this will guarantee you a goal almost every time. When you get the ball, take it to the bottom corner of the field on the computer's side, turn toward the net and shoot. If you're in the correct spot, the computer can't stop it from going in. (It may help to move a little bit closer to the net.)

Also, when it's your kickoff, dribble until you're right behind the teammate who was with you during the kickoff (he should be right in front of you). Pass the ball to him, and continue in a straight line until you reach the penalty box. Kick the ball towards the net. The goalie will block the ball back toward you, probably by diving to the ground. If he does, immediately take another shot. He will not have had time to recover, and you'll have an easy goal.

Unknown Contributor

Championship Wrestling: If your energy is about to be depleted, take refuge on the top turnbuckle, where your opponent cannot harm you. When your energy returns, wait until your opponent starts running around just below you. Jump on him, and his energy will be depleted by half or more.

Khang Nguyen
Tacoma, WA

Continued on page 92

Reviewed by Scott A. May

Skate or Die

Computer: Commodore 64
Publisher: Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
Medium: Disk
Price: $29.95

So much for nice, friendly computer games.

Electronic Arts' *Skate or Die* is rude, gross and downright unforgiving. It's also one of the funniest, most challenging sports games available for the Commodore 64. This one wasn't released—it was unleashed. Catch it while you can.

If *Skate or Die* seems like a gonzo version of *Summer Games*, it could be because two of its designers—Michael Kosaka and Stephen Landrum—worked on that original Epyx classic. But unlike the civilized nature of organized sport, *Skate or Die* is not afraid to break a few rules or a few bones. This is a high-powered tribute to—and parody of—free-form skateboarding, California style.

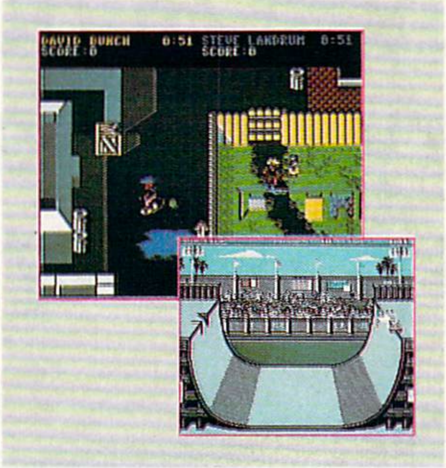
The game begins at Rodney's Skate Shop, kind of a second home to the neighborhood punks. Behind the counter is Rodney, an aging ex-surfer who's now land-based and balding. Rodney can set you up with just about anything you need, including hints on how to skate. Admire his purple mohawk, just don't stare at his ugly face.

Rodney allows up to eight players to sign up for competition or merely practice. Check out the high score lists or change board color. When you're ready, hit the pavement and prepare to skate or die.

Stepping into Townsquare, you are confronted with a main menu in the form of six side streets, each leading to a different event. Instead of a cursor, players move a skater in the desired direction. Events include the Pool Joust, Downhill Race, Downhill Jam, High Jump and Freestyle Ramp. The sixth option allows players to compete in all events.

The Townsquare setting introduces players to Michael Kosaka's truly phenomenal graphics and animation. The onscreen skater moves with uncanny precision and lifelike detail. The skater's intricate 3D movement also reveals the game's finely-tuned joystick control. This is only the beginning; it gets much better.

The first event is the Pool Joust. This radical version of the familiar medieval



tournament takes place in an empty backyard pool. Two skaters enter this concrete arena and play tag with a single boffing stick. The player with the stick is allowed five passes to knock the other down. If he fails, the stick changes hands for another five passes. This continues until one player has scored three slams on the other skater.

Multi-player jousts are performed round-robin until only one skater remains. The solitaire version pits a player against one of three computer opponents (skill levels): Poseur Pete, Aggro Eddie and Lester. The stiffer your competition, the more points you can score.

Players skate to opposite sides of the pool, passing each other in the middle. Pressing the joystick button causes the boffing stick to briefly flash. Touching the other skater with the flashing stick scores a knockdown. The tactics of survival dictate that each skater move quickly, changing direction as often as possible. Changing the tempo of your movements will also throw the other skater off. This can be accomplished by performing various stunts—rail slides, kickturns, and ollies—on the edge of the pool.

Moving on, we come to the Downhill Race, a wild and wacky dash through the park. Players race against the clock for the best time, avoiding obstacles and performing stunts for bonus points. This fast-action event dazzles the eye with remarkable animation and colorful graphics.

Players are given the choice of regular or "goofy foot" control of their skater. With regular control, pulling the joystick down moves the skater forward; pushing up slows him down. Goofy foot works the opposite way, controlling the board from the skater's point of view. In either mode, pressing the joystick button also allows players to duck, jump or perform sharp turns.

Points are scored for pinpoint skating over ramps, through tunnels, across gravel and many other obstacles. Players can also earn points for performing 180- and 360-degree mid-air turns.

The Downhill Jam features two skaters in a dark-humored demolition derby through a cluttered back alley. Two players (or one against a computer skater) battle it out in this concrete jungle filled with trash cans, bottles, open manholes, stairwells, fences and clothes lines. The controls are the same as in the Downhill Race, only this time you get to push, kick and punch your way to victory. Skate or die, for real.

The Downhill Jam is, in a word, hysterical. The graphic thrills and spills are both amazing and painful to watch. Ride your punk skater through a chain-link fence, for example, and he emerges on the other side seemingly intact. Moments later he falls to the ground in several dozen pieces. The cartoon animation is perfect.

The Freestyle Ramp is a large U-shaped structure where anything is possible. Skaters are allowed ten passes through the ramp to perform outrageous daredevil feats. Control is more complex here, requiring players to maintain sideways momentum with the joystick while executing precise movements at the top of the ramp. Tricks include kickturns, rock-n-roll, footplants, rail slides, handplants, ollies and aerials. Points are scored for level of difficulty and chaining several tricks together.

Exact timing is crucial in this event. Execute your moves too soon, and you'll be sliding down the ramp headfirst. Wait too long and you'll literally go *splat* on the bottom (which is not a pretty sight).

The High Jump is another ramp event, only much easier to control. Players are given five passes to achieve the highest aerial jump off the right side of the ramp. Simply move the joystick rapidly in any direction to build speed, and press the button at the height of your highest jump to make it official.

Skate or Die is a surprisingly versatile game, considering the rather limited nature of its sport. Supplemented with above-average graphics and bizarre humor, this challenging collection is an absolute joy. Highly recommended.

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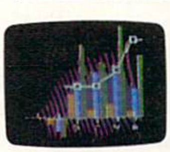
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Reviewed by Mark Cotone

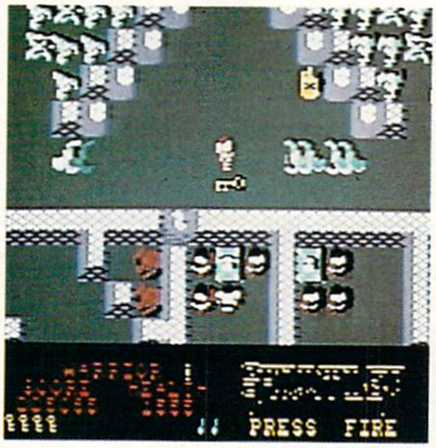
Gauntlet

Computer: Commodore 64
Publisher: Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
Medium: Disk
Price: $34.95

Not too long ago, when a player got the itch to hit the video dungeons for a little role-playing action, one of the last places he'd think to lug his sword and shield was the local arcade halls. Not that the genre didn't have an eager and receptive audience willing to punch in a healthy share of tokens. Popularity charts would suggest the opposite. It's just that the pay-for-play, quick-turnover climate of the coin-op environment wasn't designed to support the time consuming, intricate plodding of the classic Dungeons and Dragons-style adventure. Video warriors were continually forced back home to their faithful computers to get their needed fix.

Then, early last year, an innovative Atari coin-op arrived on the scene to change the situation dramatically. The name of the game was *Gauntlet*, and it would emerge to completely bridge the gap between these "incompatible" contests by successfully borrowing from each. A host of the more popular D&D elements—like personal character growth, treasure hunting, dungeon exploring and dragon dueling—were all gathered and placed upon an easy to learn, lightening-paced arcade foundation. The result was a unique multi-player coin-op adventure that quickly attracted a tremendous following from both sides of the fence. And now, in a final step that brings this game's development full circle, Mindscape has released a Commodore rendition of this precedent-setting contest. Welcome home, *Gauntlet*.

The game opens with a character selection phase, where one or two players are given the chance to choose their on-screen surrogates. Four different heroes are offered: Thor the Warrior, Merlin the Wizard, Questor the Elf, and Thyra the Valkyrie. Each of these able combatants is rated according to armor strength, shot potency, hand-to-hand ability and magic power. Depending upon how you wish to confront the enemy or complement your partner, the characters are selected and the quest begins.



The *Gauntlet* play field is a seemingly endless group of maze-like dungeons which have been jampacked full of dangerous obstacles and connected via a series of doorways. The goal of the game is to search and survive long enough to locate and exit the final dungeon, getting yourself out of this mess of a labyrinth before the elements do you in. It's a mission that will force you to fight, avoid and destroy a wide assortment of deadly creatures as you comb each vault in an attempt to find the well-guarded passageway to the next level.

The game offers a bird's-eye view of the action, tracking the warriors from above and panning about to follow them as they slash, mash and trash their way around. Fans of the arcade version will feel comfortable and familiar in these transposed surroundings. Everything's the same. Brick walls form the labyrinths that stretch out in every direction to outline a dangerous floor plan of pathways, chambers and dead ends. Objects litter the grounds waiting to be discovered and collected, including the good, such as food for physical energy, keys to open doors, and potions to increase fighting strength; as well as the bad, like the various, well-disguised poisons that can be extremely harmful if not fatal to the touch. And of course, lurking in every corner, tense and ready to spring, is a diverse cast of deadly monsters, headlined by such notorious enemies as sorcerers, demons, ghosts, and yes, even the dreaded Dark Prince of Death.

The overall size of this gauntlet is not mentioned in the documentation, and as a reviewer who has only made it to the fortieth level before succumbing to finger fatigue, I'm afraid I don't hold the definitive blueprints either. What is known is that no two dungeons are exactly alike. Even though each is composed of the same components—walls, treasures, pitfalls and monsters—the number and placement of these elements make every level a unique puzzle.

One of the more innovative ingredients that separated *Gauntlet* from the typical adventure, giving it its definite arcade slant, is the incredible number of evil beings you'll meet in your travels. They come in waves, dozens of them swarming at once like starving pack dogs fighting over a rare piece of steak. The battles are fast and furious; a shot or two is all that is needed to kill a foe. Nevertheless, the assault can be viewed as relentless thanks to a group of hideous inventions called "Monster Generators." These demonic mechanical wonders have been designed by the evil gods to create and spew forth deadly villains at the rate of one every two seconds. So as soon as one villain drops, it's as if another is there to instantly take its place. If you don't fight your way forward and destroy these creature factories, you can literally stand there and swing your sword from dawn to dusk, killing multitudes of offspring, without ever making any progress. The bloodthirsty mob will just keep on coming. Unlike most role-playing contests, sharp reflexes and a quick trigger finger will be a necessity to overpower *Gauntlet*'s evil forces.

At the screen's base, a countdown clock keeps track of your surrogate's strength, slowly ticking its way down to your inevitable demise. Certain treasures and potions can be used to add valuable seconds to your life expectancy, with poisons and lost battles taking away time in large chunks. If you delve into the dungeons alone, as soon as your life meter hits zero, the game will end. However, in the two-player game, as long as either one of the two heroes is alive, any lost soul can be easily resurrected with the tap of the fire button (a rejuvenating technique equivalent to inserting another quarter at the arcade). It's easy to see the tremendous advantage to traveling in pairs.

Discerning fans of *Gauntlet*'s pay-for-play version have probably already spotted the one glaring difference between this contest and its predecessor. At the arcades, the game cabinet supplied enough room and controls so that four players could simultaneously explore together. Due to the obvious joystick limitations, only two players can participate at one

time, cutting the potential team size in half. As unfortunate as this is, it shouldn't be viewed as an oversight, but rather a matter of the designers realizing and working within their restrictions. I suppose some will point to the fact that the computer keyboard could have been accessed to direct the additional pair of warriors, but in a game with action as furious as this, I think the programmers made the wise choice by not crowding the participants and complicating the controls.

If you're an adventurer who delights at the chance to explore the unknown and battle the unmentionable, and you don't mind the action accelerator being pressed down a notch or two, then *Gauntlet* should certainly earn a high spot on your future role-playing travel plans. It's a test of physical endurance and strategic prowess that will leave you exhausted, yet hungry for more. If by chance you do happen to crawl out from the opposite end of this deadly obstacle course, you'll be happy to learn that Mindscape has already released *Gauntlet: The Deeper Dungeons*, a follow-up package offering five hundred new dungeons to "daunt the most daring."

Alright, arcade warrior, it's time to prove yourself. How low can you go?

Battle Acts

In *Gauntlet*'s high-speed environment, swift sword swinging will prove to be a warrior's most valuable asset. That's not to say that there aren't strategic approaches that can give your swordsman the winning edge. Read on to find out how to become a cut above the rest.

- Even if you're taking a solo shot at *Gauntlet*, set the game for the two-player option. As mentioned in the review, the one-player contest simply ends when your life meter runs dry, but the two-player version allows for unlimited resurrections as long as one of the warrior pair is still alive. So even if you are traveling alone, tell the computer that you want a partner, and keep him in reserve. Then, when your initial explorer is on his last legs, pull in your fresh, uninjured backup to continue the quest. As long as you are careful not to let both surrogates die at the same time, you can keep shifting back and forth between joysticks, plunging deeper and deeper without losing any progress.
- When battling *Gauntlet*'s villains, nip the problem in the bud by attacking the Monster Generators first. This will halt creature creation, allowing you to then double back and finish off any of the remaining diabolical offspring.
- When a player dies in the two-player mode, even though he can be resurrected with a simple tap of a button, he will lose all of the personal belongings and treasures he gathered before his demise. With this in mind, always have the healthier of the two heroes pick up any of the keys, potions or other magical items that the team spots along the way. This will keep the valuables accessible for a longer period of time.
- Don't feel obligated to kill off every villain in a dungeon level before you move on to the next. Unless there is a specific treasure you are searching for, and you're willing to sacrifice time and energy points to track it down, jump into the dungeon exit as soon as it is located.
- In the two-player mode, neither player is allowed to make a move that will force the other off screen. For this reason, and to facilitate progress, it is better to appoint one player as the "leader," putting him in charge of choosing the route that the others will follow. This will help to avoid having both heroes split off in opposite directions, preventing either from making any headway. C

Reviewed by Scott A. May

Street Sports Basketball

Computer: Commodore 64
Publisher: Epyx, Inc.
600 Galveston Drive
Redwood City, CA 94063
Medium: Disk
Price: $39.95

Up for a friendly game of hoops? Feeling nostalgic for your old neighborhood teammates? The gang's all here in Epyx's *Street Sports Basketball*, a lively contest that's sure to open a vault full of memories.

Most adults will find this game to be like stepping into a time machine, recalling golden days of impromptu competition. This is a masterful tribute to the joys of unorganized sports, which any kid will tell you is the *only way to play.*

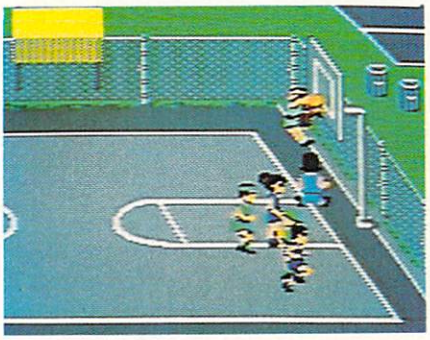
Despite all this romanticism, *Street Sports Basketball* has its feet planted firmly in today's youth. The neighborhood courts look sort of familiar. But that ragtag collection of irregular kids will never change. Even hightops are still in style.

The first decision to be made in the game is where you'd like to play. There are four courts available, each with its own advantages and drawbacks.

The school playground offers a nice, fenced-in asphalt court free of obstacles. Games played here tend to be fast and furious. This is the preferred court for "official" neighborhood tournaments. It's almost like the real thing!

The back alley court is a place where dares are made and reputations are upheld. This is a tough setting of trash cans, rocks and oil spills—perfect for a gang fight, something these pick-up games often resemble. Watch out for the curb that forms the boundary of this court. One false dribble and the ball is out of control. Those oil spills also require some fancy footwork to avoid. Step in one and you'll be watching the game from ground level.

The suburban street court offers a much cleaner environment, free of city grime, but not without its obstacles. The court here stretches across a dead-end street between two driveways. The playing surface holds a variety of challenges: curbs, trash can lids, garden hoses, grass and sidewalks. You never know how the ball



will respond as you dribble for that game-winning basket. Just stay out of the rose bed and keep an eye out for your pesky little brother.

The final court of choice is an inner-city parking lot. This somewhat grimy court is fenced in for privacy, but full of oil spills from parked cars. A ticket booth juts out slightly into the playing area, so watch where you're running.

The next choice determines if the game will be played head-to-head with a human opponent or against a computer-controlled team. Nothing beats a two-player basketball game, and this one is very good. The computer team, however, is no slouch.

Solitaire games can be set for three skill levels—Easy, Intermediate and Tough. The Easy level was obviously designed for very young players. Those with any amount of experience will breeze through this level as if the computer team never showed up. Players with street savvy should begin with Intermediate to get a feel for the game, then step right into the Tough level.

Each side then picks three players to represent their team, from a lineup of ten neighborhood kids. They may look young, but these are not mere street urchins. Rather, they are polished pros of the roundball circuit, each with his own strengths and weaknesses.

Highlighting each kid calls up a brief personality—some you might recognize from your own neighborhood—which affects his or her performance.

Butch is a hotdog, but he has the best jump shot on the block. Radar is slow, but reliable under the hoop. Julie has been known to drop the ball on several occasions, but she's always in the action. Melissa is the one to throw it to on a fast break. Ralph is fast, but sometimes his cap falls down in his eyes. Vic is the team's precision shooter—call on him to make crucial baskets. Brad isn't known for anything other than being a really nice guy. Magic boasts the neighborhood's best hook shot. Kevin is another long shooter who rarely misses. Finally, there's Dana, whose biggest claim to fame is having the only ponytail on the team.

When all the preliminary details are worked out, it's time to hit the court and stir up some action. The rules of street basketball are more relaxed than organized sports. There are no quarters, nor any time limits for that matter. Instead, players choose what score will end the game, up to 100 points per match. Likewise, there are no timeouts and definitely no penalties or free-throws. This is rough-and-tumble basketball, full of skinned elbows and knees.

Following the opening jump ball, the action is non-stop until one team emerges victorious. The on-screen player under joystick control is identified by the lighter-colored uniform (either green or blue). Control requires moving the joystick in the direction you want your highlighted player to go. Dribbling the ball is automatic. To shoot simply face the basket and press the fire button. Your player will choose the best shot for the moment—jump shot, hook or slam dunk.

Joystick control automatically changes to the player with the ball. To manually switch control to another player (on defense only), press and hold the fire button. When the desired player is highlighted, release the button and assume control.

Passing the ball is a tricky maneuver that requires timing and finesse. Players will not question your command to pass the ball, often throwing it out of bounds, into trash cans or to the other team. Use this to your advantage for long passes and fast breaks.

Stealing the ball is easy. Due to the size of the court, it's often unintentional. To steal the ball, simply walk into an opponent and rip it from his hands. Fast players can also intercept passes and jump for rebounds. These players are not perfect, however. Every game is filled with dropped balls and stumbling kids. Players can knock one or two others down by running at them full steam and jumping on them. Tackling is allowed (and often necessary).

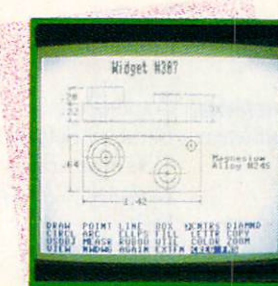
Street Sports Basketball is a delightful tongue-in-cheek action game that should appeal to a wide audience. Most fans will find the on-court antics both entertaining and challenging. If you can't go back to the old neighborhood, bring it home. ■

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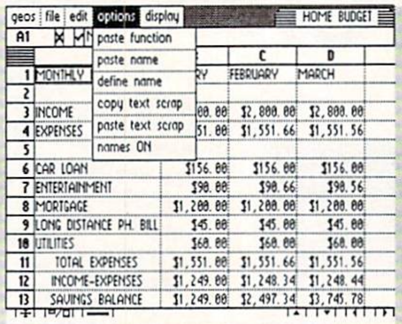
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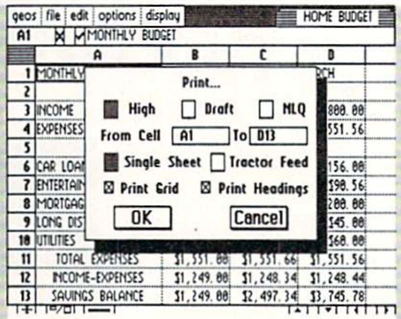
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Reviewed by Jim Esch

geoCalc

Computer: Commodore 64
Publisher: Berkeley Softworks
2150 Shattuck Avenue
Berkeley, CA 94704
Medium: Disk
Price: $49.95





After a while, all spreadsheets start to look the same. There's not much you can do to spruce up rows and columns of numbers. But *geoCalc,* though no radical departure from the norm, has combined the power of numbers with the beauty of graphic presentation. And the results are what we have come to expect from Berkeley Softworks: reliable, professional quality output for the humble 64.

GeoCalc's graphic orientation fits comfortably into the GEOS environment, which creates an icon-based system for a fraction of the price of other popular computers. But don't let its slick appearance fool you—*geoCalc* is a serious spreadsheet, sophisticated enough for the home office or small business. At your disposal lie 112 rows and 256 columns for a total of 28,672 cells (the intersection of a row and column). Basic arithmetic functions perform to 12 places of accuracy; more advanced functions calculate to nine places. *GeoCalc* uses a unique "smart" recalculation feature, which recalculates only those cells affected by a modification.

For those who have been intimidated by the thought of a spreadsheet and number management, *geoCalc* is made for you. Why? Because it's easy to use. The mouse lets you accomplish things fast without troubling your tentative fingers on the keyboard. With the mouse you can point to any cell on screen, define ranges, and even enter formulas. You can change the format, alignment, column width and text style (plain, boldface or italics) of a single cell or a range of cells, and it doesn't take long to learn how. You never have to leave your worksheet screen; all activities are accomplished by pull-down menus and pop-up dialog boxes.

GeoCalc gives you the option of creating formulas with the mouse or keyboard commands. You can click on each cell you want included in your formula (addition is the default function) or enter cell addresses by hand. It's up to you to decide which way is fastest and easiest. Even a spreadsheet beginner like myself created a checkbook account balance in about twenty minutes (after reading the manual). Once you've entered values into your cells, you can specify them as either absolute or relative values, which makes it handy to repeat formulas in successive columns without retyping the formula.

To get started you'll need the GEOS system disk. The manual details the start-up procedure for booting, making backups, and tailoring work disks. I suggest you include the following on your workdisk: *geoCalc,* deskTop 1.3, your printer driver and the calculator. If you have the 1764 RAM expansion unit, you should copy your workdisk into RAM and use your disk drive for file space. Any GEOS application will work faster in RAM than if it has to constantly read from the disk drive. If you don't have the RAM expansion, I highly recommend that you purchase it. With it, *geoCalc* will perform with lightning speed and elegance; without it, the software will feel clunky and slow. The RAM expansion lets you use your disk drive exclusively for your files, which *geoCalc* calls worksheets.

The *geoCalc* manual provides a valuable tutorial that takes you step by step through the creation of a hypothetical monthly business budget. It introduces you to the basic capabilities of the system, and lets you get hands-on experience right away. This tutorial is followed by a chapter which completely details all aspects of the software. The manual is easy to read and covers just about everything necessary for high-powered spreadsheet management.

One problem I have with *geoCalc* is its scrolling speed. When you scroll horizontally or vertically off to the edge of the screen, there is a time lag, so you have to wait for the new cell to appear or stop scrolling. You also have to wait for the information to flow into the new grid. This can be annoying and even confusing. You can avoid this to some degree by effectively managing your worksheet into screen-size blocks. The manual suggests you work in four to eight block areas to avoid packing your worksheet too densely with formulas and values, thereby requiring time-consuming memory swaps. Another way to reduce scrolling problems is to use the cursor icons at the bottom right of the screen. These advance your worksheet right, left, up or down one screen. You still have to wait for the information to pour into the grid, but it will be less confusing. *GeoCalc* also includes a split screen function, so you can view two separate portions of your worksheet at once.

Once you've entered text and values, formatted and revised your worksheet, it's time to get some hard copy. The print option lets you print your worksheet in High Quality, Draft or NLQ modes, with or without grid lines and headings. Though printing time is slow (especially with grid lines and headings), it's worth the wait. You'll get a polished, professional-looking copy that's attractive to the eye. If your spreadsheet is wider or longer than the printed page, it will advance to the next page and print the remaining data.

Most of the time, you'll want to print common borders on every page (like month rows, expense columns, etc.). Use your cut and paste functions to create page-size blocks and continue your spreadsheet in a different sector. When you go to print, define the range you want to print on the first page, then define the range for your next block of information to go on the next page, and so on until you've got a well organized output. For a normal-sized column, *geoCalc* prints about seven columns across the page before it advances to the next page. Obviously, you can fit many more rows on a page than columns, so lay out your worksheets accordingly.

In *geoCalc* you'll never work in a vacuum, because it's fully compatible with other GEOS software. You can copy information from *geoCalc* and paste it into a *geoWrite* or *geoFile* document, and vice

Continued on page 88



IT'S THE NEXT BEST THING TO SKIING THERE.

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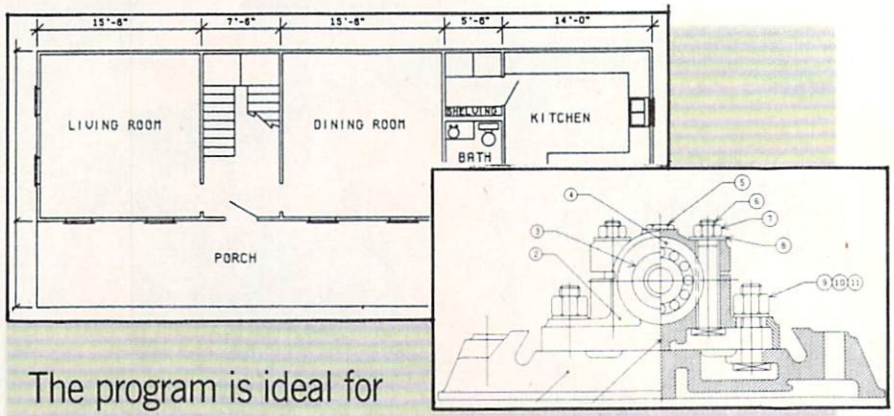
THE GAMES: WINTER EDITION BY EPYX

Commodore 64/128. Apple II & compatibles, IBM & compatibles
AUTHORIZED PURSUANT TO 36 U.S.C., SECTION 380

by Gary V. Fields

Home Designer 128

Computer: Commodore 128
Publisher: Briwall
P.O. Box 129
56 Noble St.
Kutztown, PA 19530
Medium: Disk
Price: $39.00



The program is ideal for designing house plans, woodworking projects, electrical devices, machine tooling, etc.

Home Designer 128 is a powerful yet easy to master CAD (Computer-Aided Design) program for personal use. With its help you can create architectural or engineering drawings or sketches which can be saved to disk or dumped to either a matrix printer or plotter.

The program is ideal for designing house plans, woodworking projects, electrical devices, machine tooling, etc. Providing you have the patience to master its command sequence, it can do the work of CAD programs costing much more and requiring more memory than the 128 has.

If you've never used a CAD program before, *Home Designer* will take a little practice before you'll feel comfortable with it. Although most of its commands can be activated with a mouse or joystick, it uses a command sequence similar to CAD systems designed for the MS-DOS market. Thus, all commands can be issued directly from the keyboard, using three-letter words. For instance, to insert a line you can either highlight the word "Insert" on the screen menu and then point where you want it to appear on the screen or issue the command directly from the keyboard. From the keyboard the same command would be INS LIN: followed by the X and Y coordinates. Those who are accustomed to traditional graphic design programs will probably prefer the easy-to-use joystick controls, but keyboard commands give you much more precise control over the drawing's detail. With time the unique values of both input methods became obvious, and I found myself switching between the two intuitively.

The program's impressive options include most of the standard drawing features like: lines, boxes, circles, arcs, mirrors, etc. But to make the program more useful and more professional, it allows you to insert small objects you have saved to disk (or those from a clip art library) directly into the drawing without having to recreate them each time (perfect for electronic component or building fixtures). You can also zoom in and out of a drawing to adjust detail. You can pick up and rotate objects and then relocate them or simply duplicate them elsewhere. The program supports most of the standard matrix printers but (if you can afford one) will work with plotters as well. You can even merge text created with the *PaperClip* word processor directly into a drawing.

Drawings created with *Home Designer* can be traced on screen or printed using an easy-to-change scale. For instance, if you tell the program that one inch on the drawing represents one foot on the screen, the program will automatically formulate your input to comply to this scale. So if you set the scale to 1/4 inch equals one foot and then tell the program to insert a line four feet long, it would inset a one-inch line on the screen. Yes, the program allows the use of fractions as well as whole numbers.

I was especially happy with the program's print quality. Because screen pixels and matrix print heads are always deeper than they are wide, circles are often displayed and printed as ovals instead of true circles. That's not a problem here—circles are displayed on screen as circles and, more importantly, are dumped to paper as true circles as well. The print program also lets you adjust the print scale, so small drawings can be printed larger and large drawings can be reduced to fit the paper width of your printer.

Home Designer is able to produce drawings that include very minute detail because of the way it stores the information about each drawing. Like higher-priced professional CAD packages (costing ten or 20 times more), *Home Designer* stores the information which defines each drawing as separate objects. Thus each line, circle, text string, etc. is stored in memory according to its coordinates, not the number of pixels and their location in reference to a monitor screen.

There are pluses and minuses to this method. On the positive side, drawings can be created with an amazing amount of detail, and individual objects (lines, circles, text) can be moved, copied, rotated or discarded without disturbing other parts of the drawing. For the same reason, *Home Designer* drawings can be created with up to five different layers. This means you can draw one layer and overlay it on another. Again this is a professional feature any architect would expect in a CAD program. By using layers, one could be used to display a building's foundation, the next could display its floor and wall detail while the third might show only the electrical requirements and the fourth the building's plumbing. These layers make it simple to separate detail for easier examination, refining or printing.

On the negative side, saving drawings as individual strings of information and layers causes a short but noticeable delay (usually only a few seconds) when major changes are made to a drawing or the display is resized. To minimize these replotting delays the program's creator, James Kendall, decided to have the computer shift into its fast 2MHz mode to halve the time required to map a display. I personally appreciated the logic of this solution, but because "Fast" mode causes the VIC 40-column screen to be turned off until the work is finished, some users may be an-

Continued on page 89

Reviewed by Russ Ceccola

Border Zone

Computer: Commodore 64
Publisher: Infocom
125 CambridgePark Drive
Cambridge, MA 02140
Medium: Disk
Price: $34.95

There are a lot of experiments in this game to help make the story more enjoyable.



Ever thought about going behind the Iron Curtain to experience what it's all about? Well, pick up *Border Zone* from Infocom and your curiosity will be satisfied. *Border Zone* will give you such a taste of Eastern Bloc countries, the Iron Curtain and the meaning of the word "border," so that you'll never again want to visit any of those places. This is the first game from Infocom that deals with spies and intrigue and is one of the few in that genre in the gaming world.

Border Zone is the first game since *Enchanter* from Infocom veteran Marc Blank. After leaving Infocom in 1985, Blank went to California, where he's been working on CDI (Compact Disc Interactive) technologies and projects on a consulting basis, as well as projects and games for Infocom.

In a recent interview Blank explained how *Border Zone* came to be: "One of the things that we've seen at Infocom over the years is the consumers' desire for a game in the espionage/intrigue genre. Back in 1984 or 1985, I had a conversation with Mike Dornbrook, Vice President of Marketing at Infocom, who mentioned that Infocom was interested in working with 'outside people' on games. I told him I had a kernel of an idea in my mind for a spy game, and it turned out that was exactly what Mike was looking for."

Truly, that conversation was fortuitous not only for Blank, but for text adventure fans as well. *Border Zone* is the most originally designed work of interactive fiction from Infocom since *Beyond Zork*. If this is an indication of the future direction of Infocom, their games will only get better. *Border Zone* has new features that enhance the way you play the game and contribute to the storyline. The most obvious feature is the division of the story into three chapters or episodes.

Each of the three chapters is played from the vantage point of a different character. This division brings a freshness to the game that inspires you to finish it, while allowing you a convenient and well-placed time to rest (between chapters) before getting bored or bogged down. The story has many plot twists and minor goals for each character, but all three chapters revolve around the rumored assassination of an American ambassador in the neutral country Litzenburg.

In the first chapter, you play the part of an American businessman traveling on a train out of the Eastern Bloc country Frobnia to Litzenburg. An American intelligence agent drags you into the action when he knocks on your compartment door and hands you a secret document that you must deliver to his contact at the train platform in the border town of Ostnitz. He disappears, leaving you to formulate a plan of action.

In the second chapter, you take the role of the intelligence agent, code-named Topaz, who is hurt and freezing. As Topaz, you must cross the border between Frobnia and Litzenburg, while avoiding guards, searchlights and dogs.

In the last chapter, you are the bad spy, whose mission is to make sure that the assassination takes place without any connection to his country.

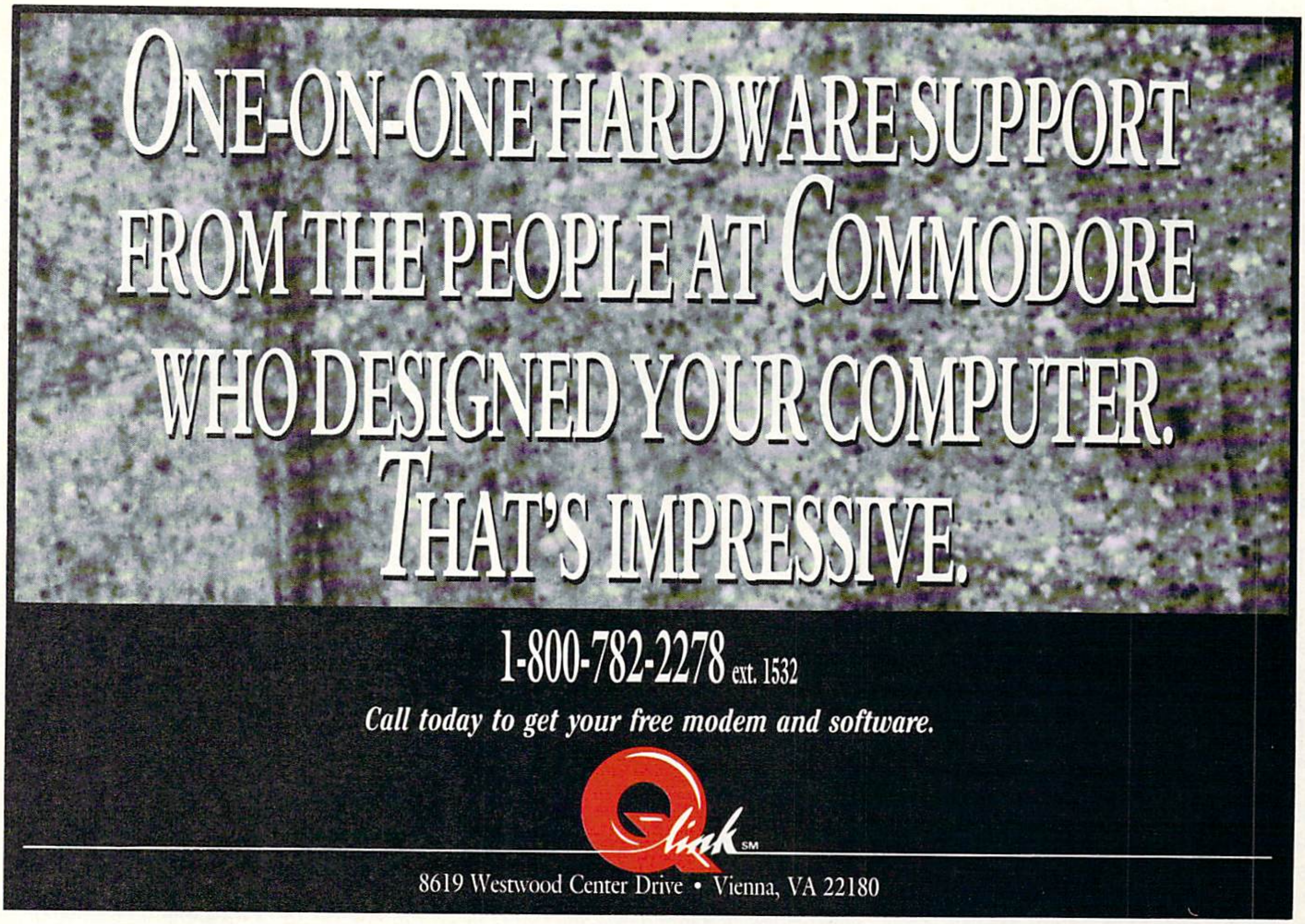
All three chapters are thrilling and challenging, causing you to alter your mindset to fit the situation and character. I found this division of *Border Zone* into three chapters more entertaining than I expected because of the unique goals in each chapter. Although the chapters can be played independently and in any order, I strongly suggest (almost command!) that you play them in order (1, 2 then 3) to get the full enjoyment from *Border Zone*.

Each chapter will take you a fair amount of time to finish and will include a lot of experimentation. Blank explained the purpose of dividing *Border Zone*: "The short stories were put in so that people could do a piece of it and feel as if they had finished something and gotten that sense of accomplishment that's hard to get in most Infocom games, because you have to work all the way to the end." This works well and is a refreshing change in text games that can sometimes seem to take forever.

Another unique feature of *Border Zone* is the use of real time in the game. No longer can you sit in one place for a long time, trying to use everything in your inventory and thinking about how to solve a puzzle. Even if you don't move, the clock in the upper-right corner of the screen constantly counts the minutes while you try to complete the goal. The clock speeds up for the second and third chapters, but you can slow it down with the SLOW command. You can also speed up the clock in the first chapter with the FAST command, making the game more challenging for veteran Infocom players. The use of real time is a plus in *Border Zone,* bringing thrill and suspense to the game in a genre where such elements are necessary.

Blank explained why he decided to put real time into *Border Zone:* "Real time had been in [Infocom's] game development facility since 1984, but no one had used it. It was put in to give a sense of suspense and make the players sit on the edge of their seats, wondering what's going to happen next. The thing that was tricky was trying to set it up so that the amount of time certain moves took would allow enough time so that people could finish everything and not make it a typing race, but at the same time make it tight enough so that you couldn't sit around for a long time and think about what you were going to do."

The last feature of *Border Zone* that really sets it apart from the pack is the inclusion of on-line hints in the game, a feature that Blank hinted might become a standard for Infocom products of the future. Using on-line hints is easy—just type HINT and follow the on-screen directions to select a question that deals with a problem you are encountering. The use of hints is entirely up to the individual. I



personally used the hints only once—when I was really stuck and wanted to finish the game before writing this review.

Although the temptation is there, using the hints too much will catch up to you. The game isn't any fun if it's played only using hints and not imagination. However, hints are a welcome relief—to be able to finish a game without spending more money on a hint book is nice. You just have to control yourself.

Blank told me about his reason for requesting on-line hints and the other features in *Border Zone*, "I wanted people to be able to finish the game and get from one scenario to the next. I put the hints in so that people wouldn't get stuck and frustrated and would be able to see what happens next. There are people who will succumb to the temptation very early on and will then kick themselves, but they shouldn't kick us. There are a lot of experiments in this game—short stories, real time and on-line hints—all put in to help the player, make the story more enjoyable and enhance the story itself and give it a new feel."

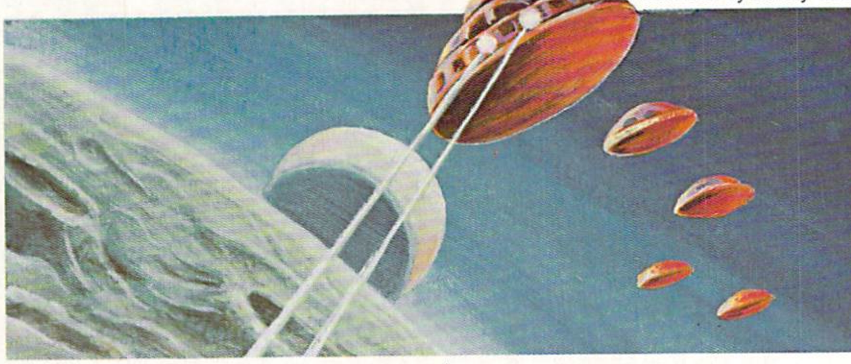
If an exciting plot, hints, real time and three characters weren't enough, the inclusions in the game package are just as impressive. Along with the disk and manual are some atmosphere-enhancing gimmicks unique to Infocom games. A business card and pack of matches are similar to those carried by the bad spy in Chapter 3 of the game. A map of the general area of the game is also included. Finally, the most humorous gimmick in an Infocom game since the G.U.E. Tech school guide in *The Lurking Horror* is the Frobnian tourist guide and phrase book. The booklet consists of pictures from the fictitious country and phrases in the Frobnian language with their English translations. The phrases act as a form of copy protection in the game.

When asked for his favorite Frobnian phrase, Blank related some additional history on the making of *Border Zone:* "I actually wrote the booklet before any of the game. I wanted something Eastern European, but silly. There's a joke about 'Gormnash floogle nomnetz!' ['All aboard!']. Back in 1984 or 1983, a game writer came to Infocom for about three months and wanted to write a spy game. It started on a train. He began to write it, got all bogged down, got another job and left. It was going to be called 'Check Point.' Then Stu Galley took over and wrote for about eight months on this game, and it was all going to take place on a train. In a very early version, Stu had this conductor on the train who said, 'Gormnash floogle nomnetz!' before it left the platform. What was interesting to me was trying to find out what it meant and incorporate some other phrases like it into what would become *Border Zone.*"

In any case, *Border Zone* is a very tense game, with the emphasis more on finishing the chapter rather than achieving a certain score. The text is white on black, which is easier on the eyes than the black on gray characters of the most recent games. The HINT option indicates how many hints are left for a particular question, giving you an indication of how much you have "cheated" in revealing an answer. The HINT option also shows some neat things to try in the game to get funny responses, in keeping with typical Infocom humor. Ultimately, *Border Zone* is an exemplary work of "interactive fiction" in that you have a challenge that provokes you every second of game play and inspires split-second timing and sneaky thinking. Now get to it—you have an assassination to stop! C

Reviewed by Jeffery Scott Hall

Vyper and Footman



BOB CLARK

Computer: Amiga
Publisher: TopDown
100 Acacia Lane
Redwood City, CA 94062
Price: $29.95 each

TopDown Software has recently released two new arcade games for the Amiga: *Vyper* and *Footman*.

Vyper

Has it been a long time since you have had the chance to blast space scum? Is your trigger finger itching for some fast-paced, laser-blasting excitement? If so, then you need to look no farther! *Vyper* by TopDown is a shoot-'em-style game sure to win you over.

The game displays two title pictures as it loads. The first is a company logo, and the second is a beautiful outer space scene. The options screen then allows the following selections: Initial Level, Start 1-Player Game, Start 2-Player Game, and See Score Table. Starting the game is as simple as selecting the Initial Level, or starting level and then selecting either a one or two player game. *Vyper* has 100 amazing levels of play! However, you may only select Initial Levels between 1 and 80. You may select from the options screen using either the keyboard or a joystick in port 2. If no user action is detected in this screen, then the game will enter demo mode. Now comes the fun part—blasting them!

Blasting Space Scum

Grab your joystick, and prepare for some non-stop shoot-'em-up excitement! Your space ship will appear at the bottom of the screen, while a 3D star background scrolls vertically. This is perhaps the best special effect for a game I have ever seen, and best of all, no 3D glasses are required! Your ships' status window will appear at the far right of the screen. The status window simply displays the High Score, Current Score, Current Level and a graphic display of the number of ships you have left. The space scum, otherwise known as Yarks, are out to penetrate the Federation planet line and then conquer your world. It is up to you to stop them, for you are their last chance of survival! The Yarks will enter the screen in many different ways, but beware—they will always fly in formation. Such formations include figure eights, spirals and various other combinations. You may move your ship from left to right, and of course, you may fire lasers. To do this, you use the keyboard or joystick. There are 100 different designs and colors of Yarks, depending upon the level you are in, and each has its own unique attack formation. As you advance from level to level, you will find the speed at with the Yarks attack to increases. When you first start the game you will be provided with three ships, however, you may obtain bonus ships throughout the game. During game play, you have a choice of several keyboard functions: pause, toggle sound off/on, and quit game and exit to options screen.

Summary

Vyper combines bone-chilling stereo sound, excellent graphics and enough levels to keep the most advanced shoot-'em-up player coming back for more. The product is very solid, and I found no errors in the program or the manual. Movement, firing and selections can be made by either keyboard or joystick. *Vyper* takes place in real time, updating the screen 60 times a second. This is the best, and I do mean the best, shoot-'em-up style game I have ever seen either in the arcade or on a home computer!

Hints and Tips

- Never keep your space ship in one position for a long period of time. If you do, you make a nice sitting target for the Yarks! Try to move your ship every five seconds at least, this makes you much harder to hit.
- If you happen to get your ship in the left or right corner of the screen, move out of there as quickly as possible. The Yarks will trap you and there will be no way for you to escape without being killed.
- Try to keep an eye on the lasers and an eye on the Yarks space ship. This may seem hard to do, especially in the higher levels of play. However, if you can manage to do so, you can dodge in between the laser fire and become a much more formidable opponent for the Yarks.
- In between levels of play, or after you have been killed, your space ship will appear on the screen about five seconds before the Yarks start firing. Position your ship so when both you and the Yarks start to open fire, so you can have the maximal chance of hitting the most targets.

Footman

Our round yellow friend is back, and he is hungrier than ever! You might think I am talking about *PacMan,* but actually I am talking about *Footman*. Put on your running shoes and prepare for some exciting maze-munching thrills.

The game starts by displaying two pictures while it finishes loading. A company logo is followed by a modest picture of our hungry friend. After the game has loaded, a menu will appear at the bottom of the second picture. The options are: New Taste, Classic and Maze Editor. To make a selection use either the joystick or keyboard to scroll up and down the options then press the fire button or RETURN key. The New Taste option gives a different version of the classic game *PacMan*. If this is chosen, the maze in which you will play will have a topdown (and that's not the company) view of everything that is happening. The ghosts and our friend *Footman* will look very different. Perhaps one of the most distinguishable differences is the fact that you can see arms and legs on *Footman*. The Classic option lets you play an almost exact duplicate of the game *PacMan*. This option is so real, it brings back memories of spending quarter after quarter. The final option, the Maze Editor, will be discussed later.

Once you have chosen the type of game you want, either New Taste or Classic, you will be presented with the selection screen. On this screen, you may choose the following selections: Initial Level,

Start 1-Player Game, Start 2-Player Game, See Score Table, and return to Main menu. Starting the game is as simple as selecting the Initial Level, or starting level, and then selecting either a one- or two-player game. To make a selection from the options screen use either the keyboard or a joystick in port 2. If no user action is detected in this screen, then the game will enter demo mode.

Munching Out

Once you have chosen the type of game you want to play, the number of players, and the initial level, then comes the fun part—eating! The rules are all too familiar, but for those of you from another planet, here's the scenario: The object of the game is to eat up all the food in the maze, which is represented by small blocks. However, things will not be all that simple, for you will have to avoid ghosts which chase you, while maneuvering around in the maze. To help you are four "Power Capsules" in the maze which will turn the ghosts into food you can eat (get the picture?). At different times while in the maze, you will find bouncing fruit to eat, which will give you bonus points. You can also earn extra lives throughout the game to help increase your chances.

Movement can be controlled by either a joystick or a keyboard. If you decide on a two-player game, one player will control the yellow *Footman* while the other player controls the green *Footman*. This provides for a unique two-player competition to see who can get the highest score. Even though you might be able to complete more mazes this way, your score will be a lot lower since your friend is playing too. During game play, you have a choice of several keyboard functions which pause, toggle sound off/on, or quit game and exit to options screen. As you advance from level to level, the mazes will change along with the speed at which the ghosts move. There are 65 different mazes and levels in which you can play, or you may create you own maze!

Creating Your Own Food

So, you're tired of eating food in the maze? Then how about creating your own? This is what makes *Footman* so unique: you can create your own customized maze in which to eat your food! You can either load a maze and change a few things, or you can create one of your own design. Building the maze is almost like using a popular paint program. You position the mouse on the piece you want, click on it, then place it anywhere in the grid you want. By doing this, you can build your maze piece-by-piece and save it to disk. Don't be afraid to experiment or to create your own maze, because at any time you can go back to the original set of mazes. If you ever get tired of playing in a familiar environment, then this is the perfect solution. All of the procedures for building your maze are described in the manual with great detail.

Summary

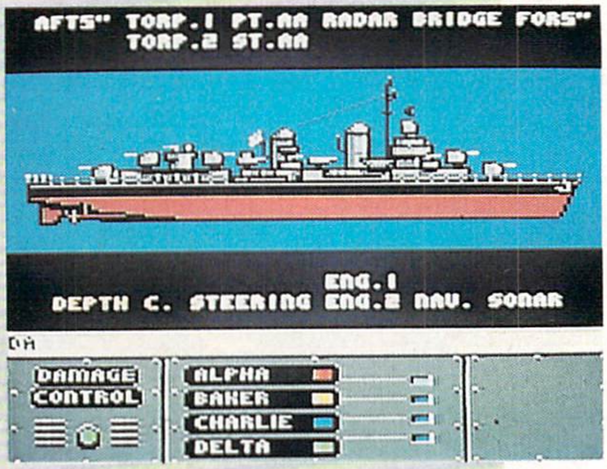
Footman combines stereo sound, superb graphics and lots of excitement to make it a sure hit. There were no errors encountered in this game, the sign of a very solid product. The manual is very detailed explaining all the options in the game, including lots of information on the Maze Editor. Whether or not you are an ace at eating food, chasing ghosts or maze maneuvering, this is one game that will keep your interest for quite some time. *Footman* will take you to new heights in maze-munching excitement, and it is sure to fill your hungry spot! C

Reviewed by Steve King

Destroyer

Computer: Amiga
Publisher: Epyx
600 Galveston Drive
Redwood City, CA 94063
Price: $39.95

Destroyer is not a long game, you *can* win, and it doesn't require tranquilizers to endure like many other simulations.



64 version

After spending months beneath the seas in the cramped, claustrophobic quarters of submarine simulators, Epyx brought me the light of day in *Destroyer,* a simulation in which you command a World War II Fletcher Class destroyer. As the Captain's Notes in the game indicate, this ship performed a wide variety of tasks during the war, from dropping scouts on islands to supporting an invasion fleet. Equipped with five-inch guns, torpedoes, depth charges and anti-aircraft batteries, they were ready for almost anything.

The opening screen lets you select one of seven different scenarios, ranging from hunting a single submarine or fending off enemy aircraft to leading a convoy to safety or rescuing a downed pilot on a small enemy-controlled south seas island. You can also select the difficulty level which controls the number of enemy attackers in each scenario. Each scenario begins randomly in that the placement of the islands and time and place of enemy attack are different each time you play. Next your orders are displayed on the screen, and you're ready to sail. The objective, of course, is to complete the mission without being sunk.

The simulation is controlled by a combination of keystrokes and joystick movements, and unfortunately, the mouse is not used. There are ten separate screens—one for each station on the ship. These are accessed by typing a two-letter abbreviation. The first station that appears is Navigation. This screen is a grid which displays your position as well as the placement of islands, friendly ships and home base. Using the joystick, you can set as many as four sequential course segments. At any time you can change your course, and a record is kept at the bottom of the screen.

Probably the most important station is the bridge, depicted as a control panel with lots of nice flashing lights, switches and dials. From here you can obtain sonar, radar and damage reports, switch from manual to automatic pilot, put the crew on various stages of alert, and activate your automatic weapons systems. There is even a switch which places the ship on an erratic course to avoid the enemy. At the bottom of the screen is the Helm section (which also appears on several other station screens) which provides dials displaying your heading and speed and allows you to steer the ship and control its speed. As you change the speed, a digitized ship's bell clangs. Placing the crew on general quarters sounds the klaxon. One worthwhile feature of the simulation is that you can automatically activate the weapons, and in essence the ship fights off the attackers automatically, giving you the leisure to attend to the mission. Of course, if you want the arcade thrill of battling the enemy yourself, moving to that particular weapons station places it under your manual control.

The ship has two sensing stations—radar and sonar. The Radar station displays a moving radar screen showing the location of any enemy ships and aircraft, as well as nearby islands. The Sonar station is quite similar but shows the presence of enemy submarines. If you spot one, you can move to the bridge and throw the pursuit switch. This allows automatic tracking of a submarine, so your efforts can be devoted to destroying it. The Helm controls are also available on these screens so that you can maneuver the ship when required.

The Observation Deck screen gives you a 360-degree view of your surroundings, regardless of the direction your ship is facing. You can see the islands, enemy ships and attacking aircraft, and the Helm controls are available here also. The Damage Control screen shows a broadside view of your ship, and the various mechanical and weapons systems are designated in text above and below it. When the name of the system flashes, it indicates damage. There are four repair teams which seem to be constantly at work. Some are better than others, and you can re-assign teams to different areas. Toggling the team name and color will give you a status report on their efforts.

The remaining screens are the various weapons stations, the most sophisticated of which are the two that control the fore and aft guns. These screens display either the bow or stern of the ship with the ocean in the background. At the bottom of the screen is the control panel. By moving the joystick up and down, left and right you aim the gun. Pushing the joystick button fires it. While this is not very accurate, you can choose to lock your radar on the target, use the joystick to line up several tracking pointers and then fire the gun. After successfully hitting an enemy ship several times, it disappears from the screen and a message flashes that it has been sunk. If the enemy ships are out of gun range, move to one of the two torpedo stations and launch torpedoes. Unlike other weapons, torpedoes are not resupplied. Once used up, there are no more. Firing is simple. Activate the torpedo you select, use the joystick to move the range marker over the target ship, and push the button to fire. Don't forget to take into account the movement of both your ship and the enemy vessel, otherwise the twain shall never meet.

The next two screens are the port and starboard (left and right for you landlubbers) anti-aircraft guns. With no radar or computer controls here, you must use your

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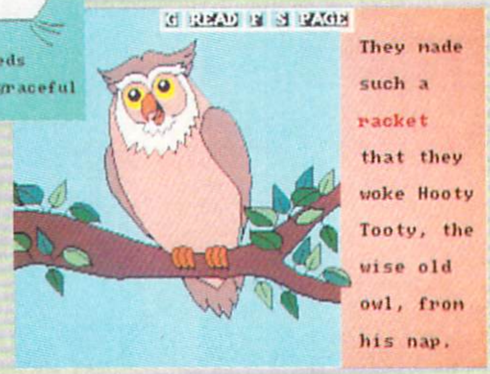

IT TAKES A LOT TO IMPRESS ME.
BRIAN DOUGHERTY
Software Designer/CEO
Berkeley Softworks
And Q-Link, the dynamic telecommunications service for Commodore® owners, does just that!
As the developer of GEOS, the graphics environment operating system for Commodore 64s and 128s, I know how good Q-Link is. Personally and professionally. Here at my company, we recommend Q-Link to all our customers. We use it ourselves, too, for online customer service ... so you can get help when you need it. We've also found it's a very efficient way to provide upgrades and patches and to announce new GEOS-compatible products.
With just your Commodore, a modem and Q-Link software, a new world of personal computing options opens up: thousands of programs you can download and keep; advanced graphics (thanks to GEOS); an exclusive help line to experts at Commodore; online educational courses taught by real teachers; fun; games; friendship, you-name-it. Q-Link lets you realize the full potential of Commodore computing—right at your fingertips.
Do I use Q-Link? Absolutely! And what's really impressive is that when you join Q-Link, you get a modem and Q-Link Software free! To my mind that's a tough offer to turn down. But don't take my word for it. Find out for yourself. Call ...
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8619 Westwood Center Drive
Vienna, VA 22180

Reviewed by Gary V. Fields

Robot Readers

Computer: Amiga
Publisher: Hilton Android Corporation
P.O. Box 7437
Huntington Beach, CA
92615-7437
Price: $29.95 each





Robot Reader can also identify objects in the picture for the child.

Robot Readers is a series of computerized story books which use synthesized speech, text and graphics to teach by bringing simple stories to life. The result is a very effective, very friendly teaching tool which lets young readers learn at their own pace.

As a parent, I am always on the lookout for good educational software for my children. In fact, one of the main reasons I became involved with computers was to give my children an educational advantage (or at least keep them from suffering a disadvantage). In the years that have passed, I've seen educational software which ran the gamut from excellent to useless and every description in between. It's always a pleasure to report on those which fall in the "excellent" category, and *Robot Readers* definitely qualifies.

Each disk-based book in the series (which currently includes *Chicken Little, Three Little Pigs, Little Red Hen* and *Aesop's Fables*) is the electronic translation of a paper-based parable. The screen display looks exactly like the page from a book. But the comparison ends there. The books are so simply structured (the disk is self-booting) children can use and learn with them without adult supervision. Because the software is completely mouse controlled, it can be handled by children as young as three years. The top of each page (screen display) includes a requester which the child can activate by pointing at and clicking the mouse. The options here are: (1) play the reading game, (2) read the page, (3) adjust the speech rate and (4) turn the page. To turn the page, the child needs to point to the word "PAGE" and click.

The books in the series are all extremely friendly, letting the reader do whatever he wishes. If the child just wants to flip pages (average 25-30 per book) and look at the pictures, that's fine. Later when the child wants to hear the text with the page, he simple points and clicks on the word "READ," and the Amiga's built-in synthesized voice will speak each word in the text. To help the child associate spoken sounds with written words, each word is underlined as it is spoken. This action parallels the way you would point to words in a book if you were reading them to your child so he or she could associate the sound of the word with the letters which form it.

The ultimate goal of *Robot Readers* is not just to entertain the child, but to help him learn to read the books themselves. For a child to learn to read he needs someone working with him to identify and pronounce new or difficult words. This is where the program really excels. If the child does not recognize a word, he can simply point at it and click, and the program will pronounce it. If the child clicks on the same word twice, the program will first pronounce the word syllable by syllable, then letter by letter and finally as an entire word. Perhaps best of all, *Robot Readers* has the patience of Job. Regardless of how many times the child asks it to read the same word over and over, it complies without complaint in the same caring tone of voice.

The power of the software is the game option. When it is selected the program will quiz the child. Using synthesized speech, it will ask the child to locate a specific word in the currently displayed page. The child then reads through the text until he recognizes the word and signals the program by pointing to the word and clicking the mouse button. The game continues until all the words are identified or the reader turns the page.

To top off an already worthy offering, *Robot Reader* can also identify objects in the picture for the child. Young children will really get a kick out of this. For instance, if the child is reading *Chicken Little* and points to the acorn which fell from the sky, the software voice will respond with "acorn," and the acorn will begin to flash. If the child points at the chicken, it will be identified as "Chicken Little," and if he points at the bump on the chicken's head caused by the acorn, the voice will respond with "Chicken Little's bump." Kids love it and I applaud the feature's inclusion in the program.

The single complaint I have is the quality of the voice, or should I say voices, the program uses. Each character in the story speaks with a different and distinct voice, some of which are not as easy to understand as others. I would have given the program a standing ovation if the people at Hilton Android had used digitized voices instead of the Amiga's synthesized one. Admittedly, only a few years ago, software which used speech at all deserved and got rave reviews, so others may argue that I'm off base with this complaint. But as good as the Amiga's onboard voices are, they are not as pleasing as a real human's. I recognize that digitizing 400 to 500 words for each story would have consumed a great deal of memory and required time to recall, but I think the end results would have been worth the effort. Despite that complaint, I would still give the *Robot Reader* series high marks.

These are quality educational software offerings which every teacher and parent of young children should consider. I think any teacher would agree each of these "books" are quality learning tools with real value. I only regret *Robot Readers* and the Amiga weren't around when my children were younger. ■

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Reviewed by Jeffery Scott Hall

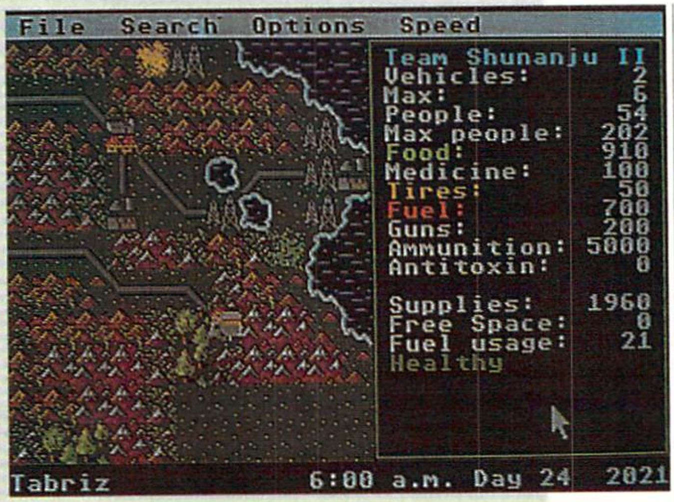
Roadwar Europa

Computer: Amiga
Publisher: Strategic Simulations, Inc.
1046 N. Rengstorff Avenue
Mountain View, CA 94043
Price: $44.95

Roadwar Europa from Strategic Simulations, Inc. puts you in the middle of a post-doomsday Europe which is held hostage by terrorists who threaten to detonate five nuclear bombs across the continent. Before Europe decides to accept defeat and agree to the demands of the terrorists, they will send in one man who might be able to save them: you.

The title screen opens with a map of Europe while music plays in the background. Click the left mouse button, and you will be presented with three options: continue a saved game, start a new game, or transfer a *Roadwar 2000* game. When starting a new game, you must build your gang from the ground up. Your first job is to select six different vehicles (from a list of nineteen) you wish to use for transportation, then re-build them. These range from motorcycles to off-road trucks, and each has its own advantages and disadvantages. (All vehicles and their attributes are described in the manual.) Once you have selected your vehicles, you must choose the men who will make up your gang. There are five different ranks of men in your gang: Armsmasters, Bodyguards, Commandos, Dragons and Escorts. Now that you have chosen your vehicles and manpower, you name your gang and start the mission.

As your gang explores Europe, you will have to battle mutants and cannibals and challenge other road gangs.



The Mission

If you think your mission will be an easy one, you had better think again! Your gang will have to find and deactivate all five hidden bombs, pinpoint the enemy's headquarters and annihilate the terrorist leaders. But wait, that's just the easy part! As your gang explores Europe, you will have to battle mutants and cannibals and challenge other road gangs. To help you maximize your chance of survival, you will need to fight for new recruits, vehicles, supplies, weapons and medicine, not to mention your own life.

You will find the screen split almost in half (vertically). The left side of the screen displays the map of Europe along with your present location, and the right half displays the gang's status. You will also find four different menus, which do basic tasks for your gang (i.e., fix flats, send out search parties, display status of each car, etc.). All menu options are described in the manual. To move your gang, simply click the left mouse button in the direction you want to move. While in a town or city, you may search for new recruits, loot supplies and hunt for more vehicles.

If you encounter a group of people who wishes to join your gang, they will be divided into four classes: Soldiers (heavily armed and very self disciplined), Hoodlums (well led, but poorly disciplined), Home Guard (not well led, lacking many fighting skills), and Civilians (inoffensive people). You will then have a choice of either accepting or refusing their offer to join your gang. But be warned, many of them do not like to be turned down and may attack you if you reject them.

You may also encounter several special people wanting to join your gang, and it will be very worthwhile to accept them. These special people are: Doctor (helps the wounded and the sick), Drill Sergeant (helps keep morale up in your gang), and Politician (serves as an envoy for recruiting people and can talk the gang out of many dangerous situations.)

When your gang decides to send out city scouts, they will report back with the current status of the town (who controls it), and whether or not they have located a nuclear bomb. If your gang does encounter a nuclear bomb, it will automatically be disabled. Sooner or later in your travels you will have to battle other road gangs (see Combat). The better your gang gets, the more rewards you get. For example, if you defeat another road gang, you may be able to add more vehicles and gang members to your group, and many of your current gang members will be promoted.

Combat

When your gang rivals another road gang, you will have a choice of Abstract, Quick or Tactical combat. In Abstract combat, you have no control of the vehicles themselves, and all fighting is done for you. This type of combat is based on your vehicles' mass and condition, and the winner is the one with the better equipment and fighters.

After selecting Abstract combat, you will have to choose which type of deployment you want: auto or manual. If you have decided on auto deployment, all men will be placed in the vehicles, and guns will be distributed. This type of deployment is done as evenly as possible, mixing men and weapons for the best fighting advantage. In manual deployment, you must distribute all your men and weapons to each vehicle in the order you wish. This type of deployment gives you more control and lets you deploy any way you want.

The next combat method is Quick. This is a simplified version of Tactical combat, in which vehicles are considered to be driving at top speed. This method allows you to specify the ram ratio (the speed at which your vehicle will hit the opponents') and the target priorities (tires, interior and topside). The difference between this

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Reviewed by Russ Ceccola

BlackJack Academy

Computer: Amiga
Publisher: MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
Price: $39.95

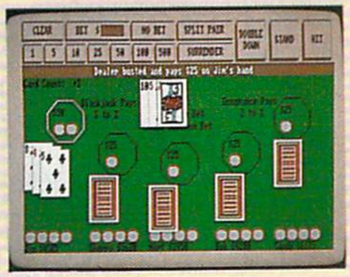
Blackjack is the most popular and common card game translated to personal computers. There are numerous blackjack programs for every type of computer, but until now none has been much more than an implementation of the rules for blackjack with some simple graphics to show playing cards and perhaps a dealer. *BlackJack Academy* from MicroIllusions takes the card game further, offering a complete treatment of all of the rules and options of blackjack, coupled with the graphical excellence and menu-based power of the Commodore Amiga.

BlackJack Academy is by far the easiest blackjack game that I've ever played on any computer. The strength of the game is concentrated in three areas: the vast wealth of information about blackjack through menus (adding the word "academy" to the game's title), the large number of options for game play and the intelligent translation of the power of the Amiga into an interface that even my computer-illiterate father picked up instantly. The amount of detail and care put into *BlackJack Academy* is immediately evident after loading the disk. This extends from the careful wording of rules and information in the help menus to the use of a spade icon as a pointer in the game.

A mouse is all you need to play *BlackJack Academy.* You never have to touch the keyboard or joystick. This feature makes working against the computer dealer much smoother. Playing *BlackJack Academy* consists of moving the pointer around the screen, clicking on boxes and pulling down menus. All of the standard blackjack options like STAND, HIT and BET are assigned their own boxes above the game table. The rest of the screen shows the table, with as many as five people allowed to play the game.

Pressing the right mouse button brings up the five menu headers at the top of the screen. These menus are the controls for altering the game setup to fit your desired playing rules and environment as well as





the locations of help files to give you advice on everything from card counting to money management. In the SETUP menu, the player setup option lets you select the number of players, give each of them a starting total and toggle a feature that writes the total for your hand on the screen. All of these choices are made on a screen that looks just like the game table—making them more unlike routine selections and more like the actual game environment in which you'll be playing.

Another feature that makes *BlackJack Academy* unique is the freedom with which you can choose the rules by which you'll play the game. Included on the game disk are rules for Las Vegas, Reno and Atlantic City casinos, as well as a set of liberal rules and the option to play custom rules. By setting up your own rule system to play by, you can test your blackjack abilities and add new life to the program if you get tired of the three major casino cities. You can alter such things as the dealer's rule on a soft 17, surrendering on a two-card hand and doubling down on two-card totals.

The Preference menu offers a number of other choices to increase your enjoyment of the program. One of thse choices toggles writing the card count to the screen, a very useful feature for users of the game to practice casino skills. If the current card count is selected from the Strategy menu, the number of cards left in the shoe (card reserve) is also shown. You can also choose the speed with which the program responds to your inputs from the Preferences menu, as well as the colors for the game. Choosing colors is as easy as moving three sliders (red, green and blue) for each color used in the game.

If you know absolutely nothing about playing blackjack other than that "hit" means to ask the dealer for another card, "stand" means that you want no more cards and that your cards need to add up to a number as close to 21 as possible without going over, while getting a higher total than the dealer to win, don't worry about it. The designers of *BlackJack Academy* kept everybody who would be playing blackjack in mind, from novice to expert. The Help menu offers aid for every major element of blackjack, from a simple card counting method to how to correctly double down or split. What you have is basically a complete tutorial on blackjack condensed into one menu.

I strongly recommend that everyone, including the expert player, read all ten topics in the Help menu before playing the game. The tips and descriptions contained in the menu are succinct; so read carefully. If the Help menu is digested first, then it won't have to be touched again during play, unless a particular point needs re-clarification. The designers of *BlackJack Academy* should be commended for the Help menu, for they have localized, together with the game, everything you could ever want in a blackjack treatment all on one disk.

Let's suppose that you still are a little bit leery about whether to hit or stand on a hand total of 12 when the dealer is showing a King. Again, *BlackJack Academy* takes care of you in a couple of ways—with the Strategy menu and the Optimal Play Quick Reference Guide. The Strategy menu offers two help files on playing strategy and betting strategy, as well as a description of the current rules and the current card count. Most importantly, an option in the menu tells you the best thing to do given the current cards shown on the table. This is probably the most-used feature of the game, for it helps to develop your own strategy and understand the relationship between the cards left in the shoe and the way you should play your hand.

The Reference Guide is a small card that depicts in matrix form the optimal play for your hand's total. Your card total is along the left side of the matrix and the dealer's showing card value is along the top of the matrix. Where the two intersect is a square that is colored blue, green, yellow or pink, telling you to split, hit, double down or stand, respectively. There are

three matrices too: one for hard totals, one for soft totals and one for pairs. I found the card easier to use than the strategy menu—only because you just have to glance at the card to get help; otherwise, the menu box would have to be chosen and the optimal play text read.

An important part of playing blackjack is knowing how much to bet at any given time. Because the money is not real in *BlackJack Academy,* you can be as careless or as careful as you want. To assist betting experimentation, minimum and maximum bets can be set to your needs/habits. A minimum of $2, $5, $25 or $100 and a maximum of $100, $300, $1000 or $3000 can be set. Also, you can play with one, two, four or six decks. If you go to a casino and examine the house rules, more likely than not, you can duplicate that playing environment with *BlackJack Academy* and put the program to some realistic use—making back the money you spent on it. I suggest trying this out, especially if you live close to a casino and visit it often. No longer do you have to lose at blackjack!

The user interface is what makes the *BlackJack Academy* package complete. Menus that need no description on how to use them and a game system that requires no more than pointing and clicking a mouse make any game better. However, *BlackJack Academy* takes this interface one step further and adds color and positionally functional boxes for the choices in the game. HIT, STAND and DOUBLE DOWN are assigned larger boxes than SPLIT PAIR and SURRENDER because the latter are used less often. Changing betting amounts doesn't require typing in numbers. Instead, a CLEAR box resets the amount to $0 and clicking on the numbered boxes increment the bet by that amount. This intelligent layout of game commands was the final "plus" that makes me praise *BlackJack Academy.*

MicroIllusions has put out some fine programs for the Amiga, but none is as complete as *BlackJack Academy.* The program is truly the best blackjack game available for Commodore computers. The only possible complaint that I can think of is that you can't choose an arbitrary number of decks with which to play, for many casinos use seven decks at some tables. But this is not a complaint—just an afterthought. After playing *BlackJack Academy* for several hours, I felt as if I had developed my skills in the game greatly. I'm sure that the same will happen for anyone who spends any time with this program. ■

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method and Tactical is the inability to board and capture other vehicles.

Finally, Tactical combat gives the most control over the outcome. Each vehicle is graphically represented on the tactical map, and you have control over driving, firing and boarding enemy vehicles. While this method of combat takes the longest of all three, it provides the player with absolute control over what takes place.

Summary

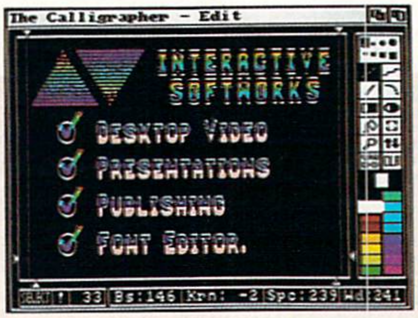
Roadwar Europa takes good advantage of the Amiga through the use of requesters, menus, stereo sound and graphics. The manual provided with the game is very complete and includes a map of Europe to help you find your location and travel along the roads. *Roadwar Europa* gives you a choice of using either the mouse or keyboard for menu selection. The option to transfer a *Roadwar 2000* game is very useful for those who have already created a gang in the previous game. You will find *Roadwar Europa* to be very challenging and also very tactical. If you like strategy mixed in combat, then you will love *Roadwar Europa!*

Hints and Tips

- The more vehicles and manpower your gang has, the more likely you are to succeed in your mission.
- Armsmasters are a gang leader's best friends! They are very strong and powerful, and they have a deadly aim. Two Armsmasters can take out five or more enemies!
- Watch out for mutants when you do battle, for their deadly disease will spread to your gang if you make contact with them. The only way to heal your gang when this happens is to find healers and buy antitoxin from them.
- Bodyguards are an excellent life saver, and it pays to have many of them in your gang. These guys are very loyal and will sacrifice themselves in exchange for you!
- A doctor in your gang can prove most useful and can save many lives both during and after combat. If you don't find your doctor useful, you may find another one and banish your current doctor for the new one.
- Send out scouting parties to every city you visit, for this is the only way to find out if there is a nuclear bomb in that city and whom the city is controlled by. ■

Reviewed by Gary V. Fields

Calligrapher



Computer: Amiga (1MB recommended)
Publisher: InterActive Softworks
2521 S. Vista Way
Suite 254
Carlsbad, CA 92008
Price: $129.95

Calligrapher is a font editor which lets you design professional-quality fonts for use with your Amiga. Once created, the fonts can be used by any software package which supports IFF disk fonts. You can design entirely new fonts or modify existing fonts to suit your needs. These fonts can range in size from as small as one pixel or as large as 160 pixels high by 256 pixels wide and can be displayed using up to 16 color combinations.

Fonts are a series of pictures, usually letters of the alphabet, punctuation, numerals and other symbols. Each font comes in a single size, described by the font height from the top of the character space to the bottom of the character space. A font set can contain up to 256 characters. On the Amiga there are two "ROM-fonts," Topaz 8 and Topaz 9 which are always available. But the second, more exciting type of font is called a disk font (like Workbench's Emerald, Sapphire, Garnet, etc.) stored on disk and loaded into memory only when required.

This is where *Calligrapher* becomes useful; it lets you create and add to that library of fonts. Anyone who has ever attempted to design a typeface (font) from scratch will appreciate *Calligrapher*'s sensible design. Rather than having to start from scratch, you can import a font design and size (from Workbench, other commercial or public domain fonts, or one of the samples on the program disk) and change only those characteristics you wish. Using powerful graphic editing tools, you can make universal changes (size, fill patterns, color, shadows) which affect all the letters and symbols in a font or edit individual characters. The editing tools (all mouse activated) include tools for defining, stamping and rotating brushes, circles, boxes, arcs and the always-welcome "undo" option. Using the fill pattern tool, you can create unique fonts for special needs.

This is a program you can boot and begin using, but I would advise against doing that. To minimize the time required to create or alter all the characters in a font (up to 256), you need to know about and how to use all of *Calligrapher*'s short cuts and tools before you start. For instance, you could simply draw each character on the screen and be done with it. But doing an entire character set would be tedious

Continued on page 64

Some Hints To Using And Adding Unique Fonts:

Creating unique fonts is one thing—getting your software to recognize and use them is another. In using *Calligrapher* I learned more about how the Amiga uses fonts than I really expected. I think anyone who has ever wanted or needed to add new fonts to Workbench's directory will benefit from what I learned (from trial and error and *Calligrapher*'s excellent tutorial/manual) developing this review.

Each time you boot your Amiga, assignments are made which determine where the system looks for information. FONTS: is one of those assignments. Unless you change this assignment, the Amiga Operating System will default to the Workbench boot disk, to a directory named fonts. If you are versed in AmigaDOS and using the CLI interface, you can direct the system to look elsewhere for fonts with the ASSIGN command. Another, but simpler method is to use InterActive Softworks' utility program called FontAssign (part of *Calligrapher*'s tools) which allows a new font home directory path to be assigned from the Workbench screen. But there is still another, easier, more flexible method. Rather than reassign the path for FONTS, simply move all the fonts which will fit in the program's pull-down menu to a separate disk and name it FONTS. Because disks are given a higher priority than directories, when the system looks for fonts to use, it will use the FONTS disk rather than the FONTS directory. As soon as a disk named FONTS is inserted, the fonts stored on it become the usable fonts. You can have many FONTS disks, with different collections of fonts. This is far and away the easiest way to use large collections of different fonts. But as always there are some dangers when simple solutions are used.

Problem One: If you were to insert two disks, both named FONTS, into two disk drives, your system will become completely confused and crash. The solution—don't do that.

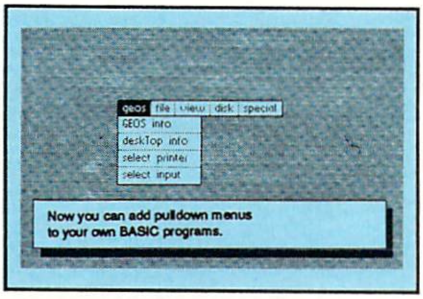
Problem Two: If you aren't careful, your fonts list may grow too long to be displayed by a pull-down menu. Some programs, including *DeluxePaint II*, will simply blank the screen if the pull-down menu touches the bottom of the screen. Even if the program does not crash, the information presented in the menu is useless, since you cannot see to access it. This annoying possibility increases each time you add a new font to your font directory. The solution—limit the number of fonts on each disk to the number the screen window can hold.

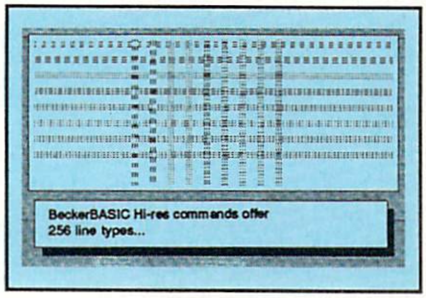
Problem Three: The last problem occurs if the font to be used is on FONT (disk b) and the software has already recognized FONT (disk a). With some software you can get it to look for a new FONT by changing the screen display. Here's a tip from InterActive Softworks on how to get *DeluxePaint II* to load a new list of fonts after it has already accessed a set: "Simply access the Screen Format selector. Each time you change bit-planes and/or resolution, *DeluxePaint II* flushes all its buffers including the one which contains the fonts list. So after you select 'Screen Format' you can switch font disk and use the new collection. Just clicking 'OK' (no change of screen resolution is required) without changing anything about the size or colors of your screen is enough to flush the buffers." Other software may respond differently and allow you to introduce new fonts using different avenues. In an extreme situation, you might have to save the screen (with the used fonts in place) to disk, quit the program and begin again to get the software to recognize new fonts.

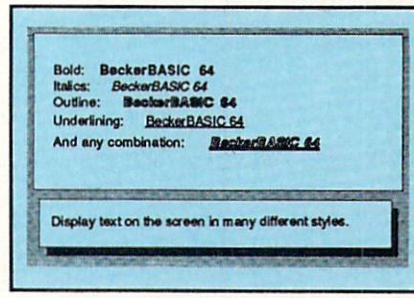
One Last Hint: If you are annoyed with the delay caused by accessing the disk each time you switch fonts—copy them to RAM. Providing you have enough RAM (512K or more) you can keep fonts in memory.

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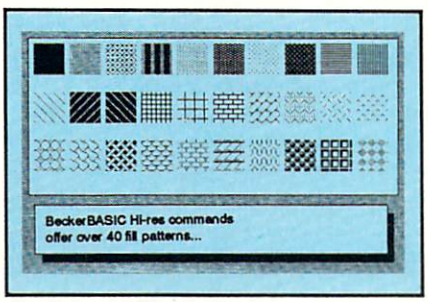
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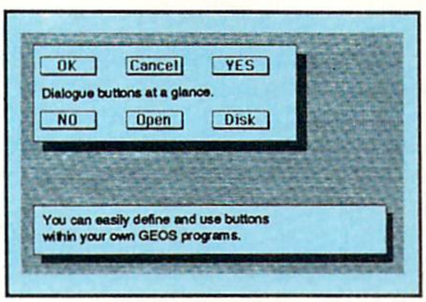
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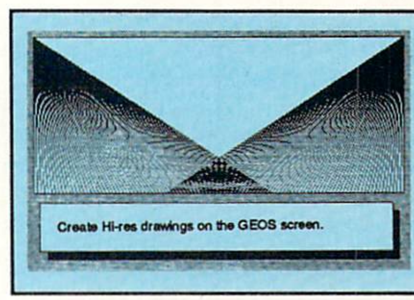
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by Robert W. Baker

Just for Fun

Explore the inner workings of the Q-Link telecommunications service with network pro Bob Baker.



ED SAUK

Even after all the coverage we've given to the message board and E-Mail editors in the past, a few useful hints are still coming in from users. Here's one from Jay Levitt that I think is really super, and I bet not too many people have really tried.

When in the People Connection, if you want to talk into a room but you're in the middle of sending an on-line message or E-Mail, just press F7. While your message is not displayed on the screen, anything you type will be sent to the room instead of being entered into your message. When ready to resume your message, simply press F5 to continue composing the text as normal.

As I mentioned, your text will be diverted from the message editor as long as your message is not displayed on the screen. While the various layers of help messages and function menus are displayed, instead of your message, your text will go into the room when you press RETURN after entering each line. Note that this only works in People Connection and not in the conference rooms. It should work in the Auditorium although I haven't tried it yet.

The only side effect of interrupting your message creation is that whatever message line you were typing at the bottom of your screen will be erased when you press F7. But that should be much better than having to cancel an entire message to respond to someone's question or comment. Thanks, Jay, for your great tip!

Here's another user tip that has to do with displaying and printing sequential text files. I mentioned a few columns back about the SPRINT and ULTRA utilities that most people use to handle downloaded text files or saved screens from Q-Link. Well, don't forget the Memo Pad function in Timeworks' *Partner 64* and *Partner 128* will do the same thing. Just use the default settings for quick and easy access to text files. Thanks for this one to whomever sent it to me, unfortunately I forgot to save your screen name.

If you're one of the Q-Link users who did not get copies of the various online games on your Q-Link disk, don't forget that you can download the missing games in the Just for Fun section. Everyone should have copies of the Hangman and Sea Strike games on their disk. The other six games (which you may not have) are all available for downloading.

You need to start with a freshly formatted disk. Then download the needed game programs to that disk. You'll also need to download a special ADDGAME program that is also available in the same area of Just for Fun. The ADDGAME program must be saved to the same disk the individual game programs are saved on. **Do not save the files onto your working Q-Link disk!**

After you have the needed files, sign off from Q-Link as usual and return to BASIC on your system. Now insert the disk you saved the ADDGAME program to, then load and run the ADDGAME program using the following command:

LOAD "ADDGAME",8,1

Follow the instructions on the screen, indicating what games you want to add. You can add one or more games, but keep in mind that you can only add whatever games that you downloaded from Q-Link. When the update process is done, you're ready to play the new games online.

While you're in the Just for Fun section you might want check out the assorted help and information messages covering the online games. You'll find general game instructions that explain how to select and start a game, how to choose playing partners, and other functions relating to playing or observing the online games.

Don't forget there is a way to remove yourself from being asked to play games when others are looking for partners. The game invitations can be annoying if you're busy in People Connection, so you can turn the messages on and off.

You can also observe a game in progress without actually participating. This can be a great way to learn more about how the games are played and what they actually look like. If you want detailed information on any of the individual games, there are game instructions available in the Fun and Games section of Just for Fun for all the online games. You'll even find information on using the RabbitJack Casino there too.

Another interesting area in Just for Fun is the QGraphics section in the recently created QSociety. Here you can learn how to create online graphics in the message boards and People Connection areas. There are "How To" areas along with Drawing Boards, weekly and special graphics contests with special prizes, plus a wide assortment of downloadable utility programs to aid your artistic endeavors.

You'll also find information on the smiles and other "expressions" that everyone uses on the system, plus a list of various common abbreviations used in People Connection and elsewhere on the system to save typing. Much of this information is contained in online text messages that you can read in the QGraphics Gallery, while more detailed information is available in downloadable files that you can view or print offline.

If you browse through the QGraphics download library you'll find the collection of tips on creating QGraphics along with an assortment of sample artwork. You'll also find interesting design aids and utility programs for creating graphics in People Connection. They let you practice your QGraphics offline and then save or print your results. Now you can learn how to handle the word wrap feature of the People Connection text buffer so your graph-

ics come out the way you planned them.

Most People Connection QGraphics can only be made by using a format that takes advantage of the message word wrap function. When entering text or graphics in a message for People Connection, the point of division for word wrap is 29 characters. This means that if a word extends beyond 29 characters in a line, that whole word is moved to the beginning of the next line where the message continues when it's displayed. All multiple-line QGraphics use this word wrap function in one way or another.

The tutorial on QGraphics in the QGraphics Gallery shows you how to create a simple "block" QGraphic, one of the most popular forms used in People Connection. These are generally created by entering six lines of characters, with each line being 15 characters long. To enter the graphics data you type each line as a "word" and separate them with a space. The entire graphic is then entered as one message in the buffer to appear as one block on the screen when displayed.

Check the online tutorial for full details along with examples; it's really not as difficult as it sounds. For even more help, download the QGraphic Tutorial file for a simple program that will teach you what QGraphics are and how to use them, plus how to type them in. It also has an accompanying design program and some samples of what others have created.

One last thing to point out in the Just for Fun area is the Family Center created early last spring. This area is staffed by professionals in family health, fitness, pet care, home care, and more, all dedicated to serving a very special interest group— your family.

The Family Health & Fitness area features message boards for various relevant topics and is staffed by a number of medical professionals. The Lyte Bytes Club also joins this area for those who might need the weight loss support group's help.

The Disabilities Club finds a new home in the Health Area, along with the special Issues in Mental Health area. Joe Carra of the University of Pittsburgh's Department of Psychiatry contributes special features each month on timely mental health issues. There are message boards where you can post comments on his articles plus discuss various topics like Parenting, Substance Abuse, and Divorce or Separation. The Q-Link chapter of Alcoholics Anonymous offers additional support and information in this area as well.

For guidance and hints on pet care, Dr. George Brodsky's Animal House is the place to go. For help with your home itself, you can Ask Doctor Fix in his message board and get handy tips or useful information from a real life contractor.

Other areas in the Family Center include the Food & Wine Club, where The Cook can teach you the difference between wines, or you can download gourmet recipes. You'll also find the popular Your Family Tree Club, where you can find information and conferences on tracing your family roots.

Q-Link is constantly changing and evolving, as I've mentioned countless times before. Be sure to watch for special messages in the Don't Miss section of Customer Service, plus announcements in your monthly Q-Link Update newsletter. You might also want to take a quick poke around the system to see what's happening every once in a while, just so you don't miss out on something interesting.

That's about it for another month. As usual you can reach me almost daily via E-Mail to RBAKER if you have any comments, questions or suggestions concerning this column. Also, don't forget that previous columns are now available online. C

by John Iovine

Subliminal Communication

This month we will begin to explore the world of subliminal phenomena. I'm sure a lot of you are familiar with subliminals. For the uninitiated, subliminals consist of information (usually audio/visual) presented in such a manner so as to not be consciously perceived. Therefore, the person listening to or viewing the subliminal is not consciously aware of its presence. Subliminal techniques are targeted to motivate a person's behavior or thought.

We will construct a video switch that works in conjunction with a VCR and your Commodore 64 or 128. Essentially what we will do is create a message screen on the computer's monitor and flash this message screen subliminally onto the VCR's monitor (usually a TV set). The VCR can either be playing a tape or, by using the built-in TV tuner, receiving broadcast television. The subliminal switch will work in either configuration.

Using subliminal techniques you can explore the prospects of self programming the human bio-computer—your brain. You may want to try this technique to shed a few pounds or to help you relax. I'll go into greater detail on the mechanics of the message screens later.

History

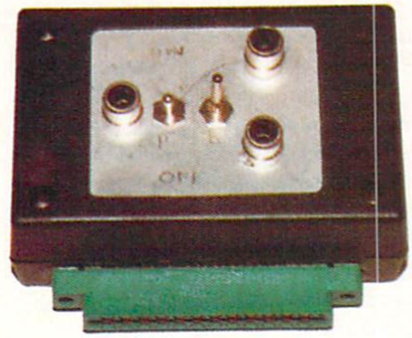
As far back as 1894, Dr. W. R. Dunham wrote commentaries on subliminal communication.

Subliminal communication was first publicized in the 1950s when a New Jersey theater owner subliminally flashed a refreshment advertisement over Kim Novak in the movie *Picnic* and reported a 58% increase in the sales of Coca-Cola.

More recently, subliminals are found in advertising, popular music and theater.

Orwellian Mind Control

Subliminal techniques are feared because they effectively bypass our normal conscious mind. For instance, let's suppose someone wants to sell you a widget. After you listen to the sales pitch, you make a conscious decision on whether you want to purchase the widget by analyzing whether it will perform as claimed and is worth the cost. OK, no problem here. But if your subconsicous mind is bombarded with



subliminals that tell you this widget will make you wealthy, sexy, popular and intelligent, your conscious decision-making process is short circuited. If your subconscious mind becomes convinced of the subliminal affirmations, you find yourself wanting to buy this widget. You may think it's your own idea that you need or want it.

Various advertisements and their progenitor agencies have been accused of making use of subliminals to generate a greater profit per advertising dollar. I will not try to justify this Orwellian concept of mind control by media, but I have supplied a bibliography for those who wish to pursue this interesting topic further.

Audio

Another area currently utilizing subliminal techniques are self-help audio cassettes. These tapes have subliminal messages masked in the background of music. The tapes are designed to help the listener stop smoking, lose weight, relax, gain self confidence, etc. I don't know how effective the tapes are at helping people accomplish their goals, and I am not advancing their use.

However, there may be something to it since this type of subliminal is also being used in industry. A case in point: some large department stores use subliminals to help reduce customer and employee theft, and naturally, to increase sales. You may have heard music being played in stores and malls; what you can't hear is whether there are subliminals encoded in the music. Also some popular rock groups insert subliminal messages in their music.

Visual

Visual information can be encoded with two basic methods. The first is the subliminal cut and paste operation. When the movie is shown the subliminal images pass too quickly for them to register consciously, but our subconscious picks them up. This is the method that we will be using, and although we are working with videotape and/or broadcast TV, the basics are the same. This is the tachistoscopic method.

The second method is more advanced and much harder to detect. Here an image or phrase is overlaid onto the film image. The phrase is held at a slightly lower illumination level than the overall picture. Again this image or phrase is not consciously picked up. This is the method of choice; it's technologically more advanced, harder to detect and effective.

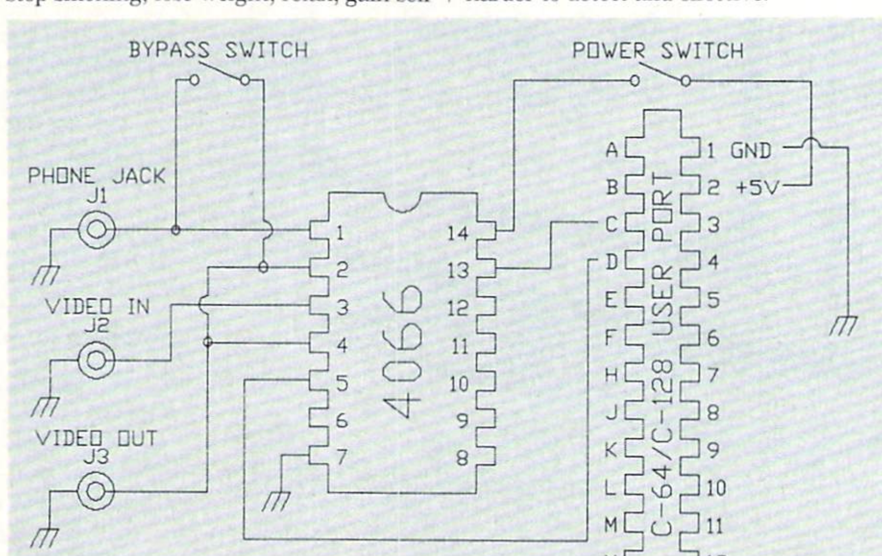


Diagram 1

Subliminals and the Law

Currently there are no laws to prohibit the use of subliminals. There are no laws that require anyone using subliminals to inform those subjected to the messages. Although many people believe that such laws have been enacted, they would be nearly impossible to enforce as detection is so difficult.

The FCC has a regulation concerning deceptive advertising on television, but it relies on the FTC to make the determination on what's deceptive. The bottom line is that ads are not checked for subliminals except for a cursory look see for the most basic tachistoscopic images.

Parts List

Qty	Item/Description	Radio Shack Part Number	Cost
2	Submini switch	275-645	$ 1.79 ea
4	Phono jacks	274-246	1.99 pkg/4
2	Phono plugs	274-339	1.49 pkg/2
1	Box w/ PC board	270-291	3.99
1	4066 Quad bi-switch	276-2466	1.19
1	IC Board (optional)	276-159	1.49
1	6 foot audio/video cable	15-1537	6.95
1	RF Modulator	15-1273	26.95

From: Mouser Electronics
11433 Woodside Ave.
Santee, CA 92071
(619) 449-2222

1	Card Connector	568-50-24A-30	3.49

Circuit Construction

First check your VCR for video and audio output jacks. Most VCRs have separate video and audio input and output (see photo). If your VCR doesn't, *stop;* you can't use this circuit. (You cannot use the RF out that is connected to the TV antenna leads.)

The circuit is quite simple and inexpensive. We are using a 4066 quad bi-lateral switch to block and steer our video image to the monitor. The program takes the video signal from the computer and displays it on the screen for 1/60 of a second every three or four seconds. Whatever you put on your computer screen will be flashed to your subconscious mind. The rest of the time the standard picture from the VCR will be playing.

Look at diagram 1. Our two control lines PB0 and PB1 are connected to the electronic switches. The lines control the switches' on and off operation. When we output a binary "1" on the line, that switch will turn on allowing that video signal to be transmitted. It's important that only one switch be turned on at a time, or you will display a rather messy picture.

The entire circuit is constructed in a small circuit box. (See parts list.) The circuit board that comes with the box may be a little difficult to construct the circuit on. I purchased another board that made the construction much easier and fit it into the box. (See parts list.) First drill all the holes required for the switches and phono jacks. Cut a slot in the bottom of the box large enough to fit the user port connector terminals inside. I used crazy glue to mount the card connector to the box. Solder your wires to the card connector before you mount it.

Hook-Up

Look at diagram 2 for the hook up. The RF modulator (Radio-Shack PN#15-1273) accepts video and audio inputs. Use standard phono cables to connect the switch to the VCR and RF modulator. You will have to make a short cable for the computer to the switch. I tried using an 8-pin din plug to connect to the video-out of my 128; it didn't fit. I had to insert two wires stripped about 1/2-inch into the appropriate socket holes and tape them to the computer. To the other end of the wires I soldered a standard phono plug. (See parts list.)

Circuit Operation

Before installing the circuit in the user port, make sure both switches are in the off position. After installing, turn the computer on and configure the port with a POKE56579,255. This, as you should know, turns our port into output bits. Now turn on the subliminal circuit power switch. One reason the switch is included is that upon power up the user port, although configured as an input device, outputs enough current through its pull-up resistors to turn the subliminal circuit switches on. (See "Interfacing Commodore's User Port, Part 1" in the April 1987 issue of *Commodore Magazine* for further information.)

POKE 56577,1 turns channel one on.

POKE 56577,2 turns channel two on.

By using the two pokes above, you should be able to switch screens between the computer video and the VCR video. If you encounter a problem at this point, see the section on Trouble Shooting.

Another reason the power switch is included is so you can operate your computer without turning on the subliminal cir-

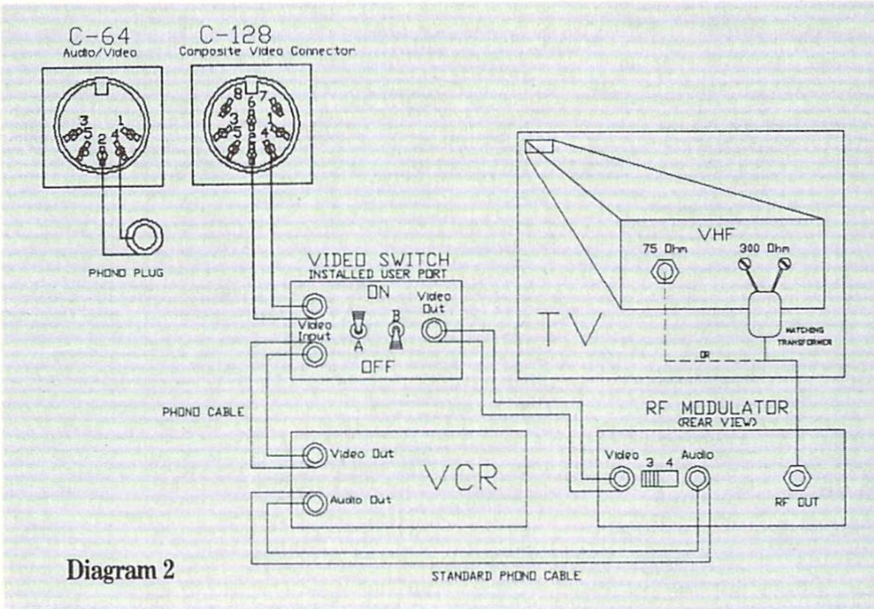


Diagram 2

STEPHEN KOZACHYN

cuit. This is where the bypass switch also comes into effect. Rather than constantly switching cables, the bypass switch allows you to bypass the circuit and feed directly into your RF modulator. To bypass, simply turn the switch on, for subliminal operation keep the switch in off position. (*Note:* when you bypass make sure your power switch is off also.)

I have included two programs for each computer. One is written entirely in BASIC. This program is to show how the system works. In using it you'll see a noticeable flicker when the screens change. The problem is eliminated in the second program which contains a short ML program that does the screen cut.

The ML program switches the computer video onto the monitor for 1/60 of a second every three or four seconds. With the program up and running, if you find yourself looking at the computer video, switch the VCR and computer cables. At any time you can stop the program and by using the appropriate poke command get back to your computer screen. Of course this command will be given in the dark.

Message Screen

You have as much latitude as you want. Try to convey your message in a positive tone. For example, suppose you wanted to use this technique to lose a few pounds. Instead of a message like "You're Fat!" use a message like "Not Hungry" or "I like to exercise."

Whatever you have printed to the screen will be flashed via the circuit switch. Using a program that prints to the screen in large letters would be beneficial, or you can design your own using Commodore graphics.

For 64 users the video out screen is the same as the RF out screen. For 128 users with an 80-column RGB (or monochrome connected to the RGB) your video out is the graphics screen. I suggest you use the Graphics 0 screen to print type.

Trouble Shooting

You would think that such a simple circuit wouldn't require any trouble shooting, and for the most part it doesn't. But there are a few points to keep in mind. First and foremost, keep the ground wires straight. If you inadvertently cross these wires, that portion of the video won't work. If this happens on the video out, the entire circuit will not work. The ground wire is connected to the outside of the jacks and also to the outside of the plug connector you'll be using from the computer. I advise you to buy standard phono cables for the rest of the hook-up rather than making the cables. ■

Bibliography

Subliminal Seduction
by Wilson Bryan Key
Signet Books

Subliminal Communication
by Eldon Taylor
JAR Books
Salt Lake City

Applications of Subliminal Video and Audio Stimuli in Therapeutic, Educational, Industrial, and Commercial Settings
Eighth Annual Northeast Bioengineering Conference
Massachusetts Institute of Technology, Cambridge (1980)

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

BASIC Program

```
10 REM BASIC PROGRAM FOR C-64 &
   C-128'BAAD
15 REM SUBLIMINAL SWITCH'BQFH
20 POKE 56579,255: REM SET UP USER
   PORT'CXBF
25 POKE 56577,1: REM PUT CHANNEL ONE
   ON MONITOR'CFYM
30 REM **    FOR C-128 ADD GRAPHIC0,
   1 COMMAND **'BHXH
35 PRINT"PRINT YOUR MESSAGE OR
   GRAPHIC SCREEN"'BABO
100 POKE 56577,2:POKE 56577,1'CPMY
105 FOR T=1 TO 9999:NEXT T
    :GOTO 100'FMNF
```

64 ML Version

```
10 DATA 120,169,255,141,003,221,169,
   002,141,001'BOTE
12 DATA 221,160,008,162,202,202,208,
   253,136,208'BOBG
14 DATA 248,206,001,221,088,096,
   062'BCOG
16 FOR I=49152 TO 49178:READ A
   :POKE I,A'FRLJ
18 B=B+A:NEXT'DEUH
20 REM IF B<>3902 THEN PRINT "ERROR
   IN DATA STATEMENT"'BSYJ
24 POKE 56579,255'BJKE
26 REM POKE56577,1 AND ,
   2 TO CHANGE SCREENS'BGGM
30 PRINT"[DOWN6,RIGHT7]
   PUT YOUR MESSAGE HERE"'BAWG
32 PRINT"PRINT ANY GRAPHICS YOU'D
   LIKE"'BAHJ
34 SYS 49152'BFME
36 FOR T=1 TO 9999:NEXT T:GOTO 34'FLVK
```

128 ML Version

```
10 DATA 120,169,255,141,003,221,169,
   002,141,001'BOTE
12 DATA 221,160,008,162,202,202,208,
   253,136,208'BOBG
14 DATA 248,206,001,221,088,096,
   062'BCOG
16 FOR I=4864 TO 4890:READ A
   :POKE I,A'FPIJ
18 B=B+A:NEXT'DEUH
20 REM IF B<>3902 THEN PRINT "ERROR
   IN DATA STATEMENT"'BSYJ
24 POKE 56579,255'BJKE
26 REM POKE56577,1 AND ,
   2 TO CHANGE SCREENS'BGGM
28 GRAPHIC 0,1'BDGH
30 PRINT"[DOWN6,RIGHT7]
   PUT YOUR MESSAGE HERE"'BAWG
32 PRINT"PRINT ANY GRAPHICS YOU'D
   LIKE"'BAHJ
34 SYS 4864'BEPE
36 FOR T=1 TO 9999:NEXT T:GOTO 34'FLVK
```

END

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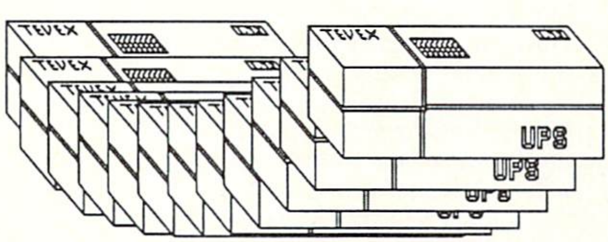
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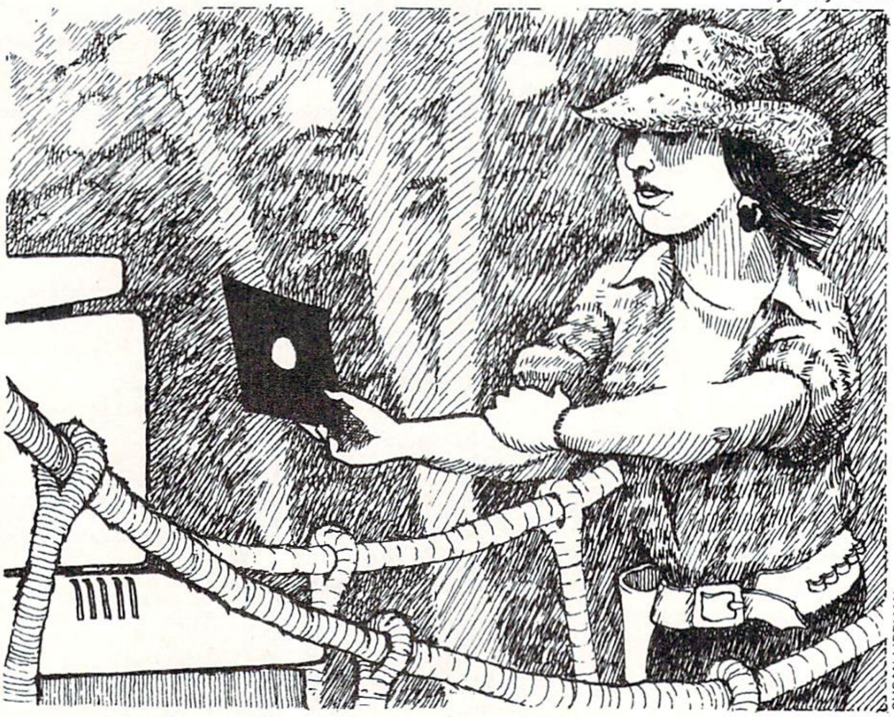
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by Shay Addams

Fastest Access in the West

News and opinion from a leading explorer of those fantasy realms called adventure games.



SUSAN LIPPMAN

I just finished verifying a walkthrough for *Dark Lord*, which means playing a step-by-step solution to make sure it's correct. "Playing" an adventure this way is no fun, but somebody's got to do it for each solution and set of maps we publish in *QuestBusters*—at least I got to see and hear everything in this graphic adventure, which has some of the fastest-loading illustrations I've seen in such a game.

Accolade recently sent me a stop watch to promote a racing game, so I've been using it (the stop watch, not the game) to time disk access in adventures. Programmed by Kyle Freeman, *Dark Lord* paints the screen with a fresh set of color graphics in 3.127 seconds on the 64, which is right up there with the access time for most graphic adventures on an Apple IIc. On top of all that speed, the program profits from stylized spot animation that looks better than similar effects seen in other graphic adventures.

The quest begins when you run across your grandfather's journal and read about his discovery of the Afterworld, a land of forests, bridges and volcanos. Though many had tried and failed, he finally defeated the evil Lord Nequam who ruled there. But the journal says that years later your grandfather's nightmares convinced him the Dark Lord had arisen, so your quest becomes clear: Wipe this guy's name off the "Ten Most Wanted List" of Evil Wizards.

It has three skill levels: Normal, Easy and Random. In the Easy version you won't have as much trouble finding and obtaining useful objects as you will in the Normal game, and the Easy version offers more clues. The Random one scrambles the objects' locations for each new game. Death is nothing to fear, for you are promptly resurrected in a new location and still have all your possessions.

In addition to the spot animation that enhances many scenes, multi-toned tunes play when you enter some locations. But they don't drone on endlessly, forcing you to turn the sound down or off. The excellent save feature lets you save up to eight games (by number, not name) on the program disk. You can easily restore a saved game at any time but have to reboot the program to begin from scratch. The parser is a simple two-word affair. However, it does have an "oops" feature like Infocom's parser (the only other game I've seen with this), which saves some retyping time if you misspell a word or use one that's not in the program's vocabulary. In that case you merely type "oops" followed by the correct word (hopefully).

This combination of good puzzles, three skill levels and first-rate graphics and music makes *Dark Lord* a good choice for newcomers as well as experienced fans of graphic adventures. And it has one of the best endings I've seen in years, giving you a musical reward for solving the game.

Do-It-Yourself Dungeons

If you're more intrigued with the notion of writing your own adventure, or just like a good "shoot-'em-up-in-a-maze" game, Electronic Arts recently imported an Australian program that includes a scenario with a 100-level maze and a Dungeon Construction Set. Written by four Australians calling themselves Micro Forte, *Demon Stalkers* plays a lot like *Gauntlet*. The animation and sound effects are slick, and the scenario, "Raid on Doomfane," is actually more substantial than *Gauntlet* (which it closely resembles in many aspects).

That's because *Demon Stalkers* challenges you to complete an actual quest instead of just blasting your way through a progressively harder series of mazes as you do in *Gauntlet*. You're out to find and slay Calvran, an evil mage who dwells at the bottom of a 100-level dungeon. On some levels you must complete a specific goal in order to reach the next maze. These are described in scrolls, which might tell you to open all the chests or grab all the amulets or other items on the current level. Scrolls also reveal details of the story, another thing that distinguishes this game from *Gauntlet*.

You'll battle gangs of animated monsters that emerge from the Sewers and Vortexes. Armed with an endless supply of crossbow bolts, you can also pick up magic spells and artifacts in the mazes. In order to complete the "Doomfane" scenario, you've got to be fast with the joystick and good at figuring out how to most effectively use the keys, Deathscrolls and various artifacts. You can save one game in progress on the disk, and a convenient "Surrender" option lets you start over at a maze's entrance if the going gets tough.

I've never been good at working with construction sets, so I asked Ken St. André, president and founder of the Adventure Construction Set Club about this one. He says it's four times as cumbersome to use as *ACS* or *Pinball Construction*, mainly because you can only edit one out of 220 squares at a time—and can see only two of them during construction. It is also harder to improvise with, and the manual recommends designing each maze on graph paper before even booting

Continued on page 89

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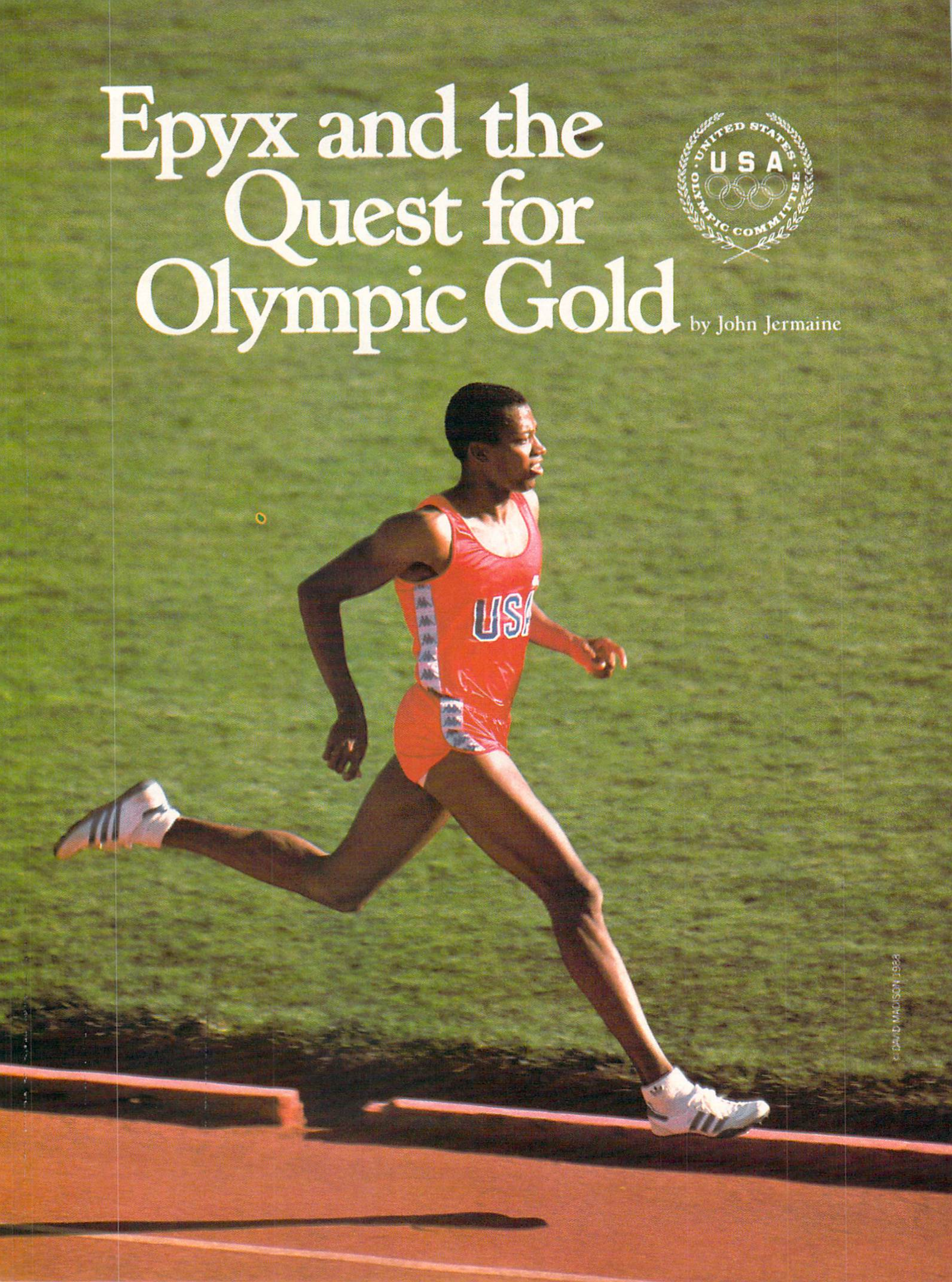
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Epyx and the Quest for Olympic Gold

by John Jermaine



During the latter half of 1983, Epyx (a recognized developer of microcomputer software at the time) initiated a bold new experiment. They began development on *Summer Games*, a multi-event program that would bring the thrills and excitement of Olympic competition into the homes of their followers around the world. Today, Epyx is an official licensee of the 1988 U.S. Olympic Team and has exclusive marketing rights in the area of computer games. They have five successful *Games* projects under their belt, and they are presently marketing *The Games: Winter and Summer Editions*. If you'd like to learn the secrets of this incredible line of games, how Epyx became a licensee and the function of the United States Olympic Committee, this article should answer most of your questions.

Now here's an interesting question for you trivia buffs out there. Do you know what Alexander The Great, Emperor Nero, Dr. Benjamin Spock, and General George S. Patton all have in common? Believe it or not, every one of these famous individuals participated in the Olympic games. How did this grand tradition begin? No one really knows for sure, but historians believe athletic competition (in honor of the gods) probably replaced the traditional prayers and human sacrifices in ancient Greece because the people were gradually becoming more civilized. Whatever the case, we know a young cook named Coroebus of Elis was the victor of a one-stade race (about 200 yards) in the valley of Olympia during the year 776 B.C. It's also interesting to note that the ancient Greek calendar begins in 776 B.C., and there are no records of Olympic contests being held before that date.

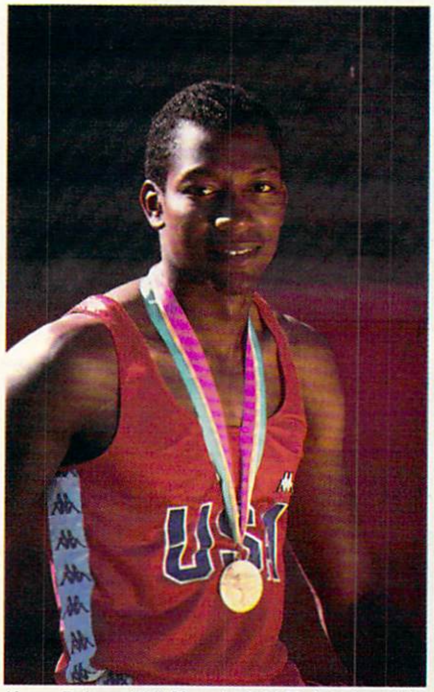
During the early years of the Olympic festival, local city-states participated in running events on the sacred site. But as time passed, thousands of Greeks, Romans and wealthy individuals (from every corner of the known world) traveled to the valley once every four years to watch the athletes and participate in the religious ceremonies.

The games themselves were also changing. New contests, and variations of the old ones, were gradually added to the scheme of things. These new sports included: boxing, wrestling, the pankration (a brutal event containing the elements of boxing and wrestling), chariot racing, foot races where the athletes wore armor, and the pentathlon (a unique challenge where the participants ran, wrestled, broad jumped, threw the javelin and hurled a discus in order to win). Winners of the games received an olive wreath and were showered with gifts from their admirers when they returned home. Unfortunately, losers were scorned by the public.

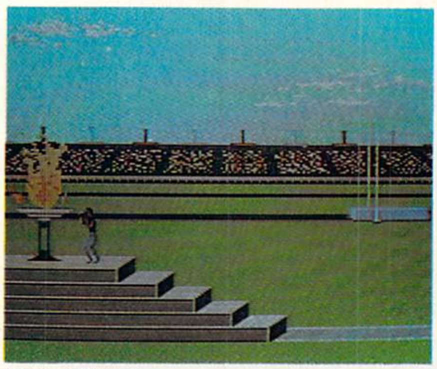
As Grecian power declined, and Rome strengthened its grip on the ancient world, several factors brought about the demise of the Olympic dream: (1) wealthy Roman politicians intimidated athletes and fixed the outcome of certain events; (2) Rome encouraged athletes (from every corner of the empire) to participate in the Olympic Games, making it very difficult for the Greeks to win a single event; (3) the river in the valley of Olympia changed its course; and (4) Emperor Theodosius of Rome (a Christian opposed to pagan rituals of any kind) officially abolished the Games in 394 A.D.

Approximately 1,500 years elapsed before the Olympic flame was rekindled in the land of its birth. Athens became the site of the first modern Olympic Games on April 6, 1896. The Winter Olympic tradition began in Chamonix, France during the early months of 1924. Over the years 21 revivals of the games have officially taken place. Olympic champions have also become the folk heroes of our time. Names like Jim Thorpe, Jesse Owens, Jean Claude Killy, Peggy Flemming, Cassius Clay (now known as Mohammed Ali), Nadia Comaneci, Mark Spitz, Mary Lou Retton, and many others continue to remind us that no goal is truly beyond our reach.

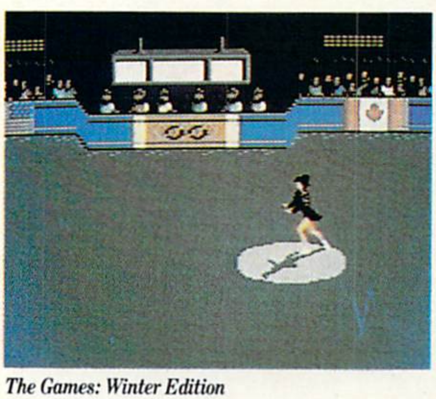
In 1983, Epyx began development on *Summer Games*, a multi-event program that would bring the thrills and excitement of Olympic competition into the homes of their followers around the world. While perhaps not as dramatic a history as the Olympics themselves, here is the fascinating story behind these very popular games.



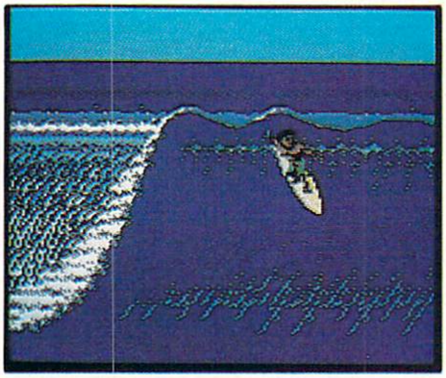
Alonzo Babers, 1984 Olympic Gold Medal winner in the 400-Meter Run and the 1600-Meter Relay.

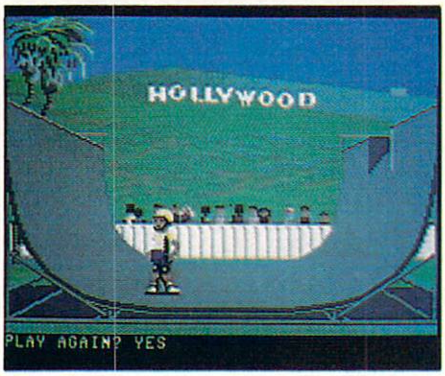


Summer Games



The Games: Winter Edition





California Games

Jermaine: How are *Games* programs developed at Epyx?

Robert Lindsey (Director of Creative Development): First of all, we need to step back and study the basic structure of the development department. Engineering project managers supervise the progress of software projects from beginning to end. I use the word "Engineering," because these talented individuals are all former programmers, having published product to their credit in the industry. They can also write code on a number of different processors, while having the ability to speak several programming languages (C, Assembly Language, etc.). Therefore, when it comes time to design a product, they can address the issues of design across a number of different systems. To support them, there is a staff of programmers (who can also speak many languages and have experience with different processors), seven artists, sound engineers, a sound director and a testing department. Collectively there are about 50 people on site involved in software development. Externally, probably 100 individuals are working on projects in various capacities.

Getting back to the subject of development, project managers have the responsibility to champion a design they believe in. Matt Householder, for example, was the project manager of *California Games.* He had taken time to research the fads and fun things young people were doing here in California. Matt wrote up a top-of-the-line design proposal and submitted it to our joint committee of marketing and development people. During this special meeting, the design idea was expanded upon to include the views of the group as a whole. Then it was time for Matt to refine the concept even more (from a technical point of view), assess his resources and get things under way. This was the point where artists and programmers could be drawn into the project to make his dream a reality. *California Games,* however, wasn't just a Matt Householder project. It was a very large and collective team effort, led by a dedicated project manager.

Jermaine: Is it harder to generate a *Games* project than it is to work on other software programs?

Lindsey: I can't speak for all simulations, arcade game conversions, etc., per say, but we're dealing with fairly large teams that can become somewhat unwieldy at times. I'd like to give you some facts and figures to think about. Epyx's *Destroyer* and *Sub Battle Simulator* games were probably created by two-man programming teams. These projects were done with a minimal amount of art and sound support, because they just weren't as intense as some of our other programs.

Summer Games II, on the other hand, was generated by four programmers and an artist, during a six-month period of time. Two man-years of development time went into the effort. Our current project (*The Games: Winter Edition*) provided work for six programmers, all seven in-house artists and two sound engineers. The game was constructed within a six- to eight-month time frame, while approximately three to four man-years of development time went into the making of that particular product.

As you can clearly see, we're recruiting new people (with fresh ideas) for each additional installment of the *Games* series. By using this approach, we feel the product quality is constantly improving, even though every project becomes progressively more complicated than the one before it. By the way, the additional cost of bringing more and more people together (for *Games* assignments) is not passed along to the consumer.

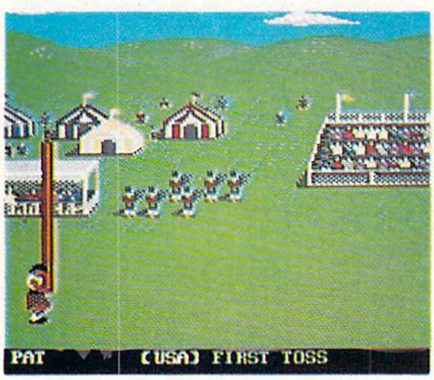
Robert Botch was Epyx's Vice President of Marketing when the Games *line of products got off the ground. Today he's the Vice President of Marketing and Product Development, Consumer Electronics Division. Looking back to when* Summer Games *was created, Bob remembers some interesting information that hasn't been revealed to the public before.*

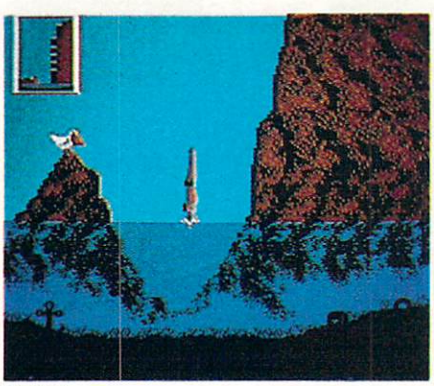
Jermaine: Did Epyx try to become a licensee of the 1984 Olympic team?

Botch: Late in 1983 (shortly before the Winter Olympic Games took place), we thought about getting a license to develop an Olympic-style product. Obviously we were a little late for a winter game, since it takes us six to twelve months to create a program of this nature, so we concentrated on doing a Summer Olympic project. Unfortunately, we soon discovered that Atari had already become the official licensee of the 1984 Olympics. This information put an end to our quest for the license, but we still wanted to do the program.

Jermaine: Where did the name "Summer Games" come from?

Botch: With Atari holding the Olympic license that year, we had to be careful not to step on their toes. This meant Epyx couldn't use a title that directly referred to the Los Angeles Summer Olympic Games. We automatically rejected two possible product names for obvious





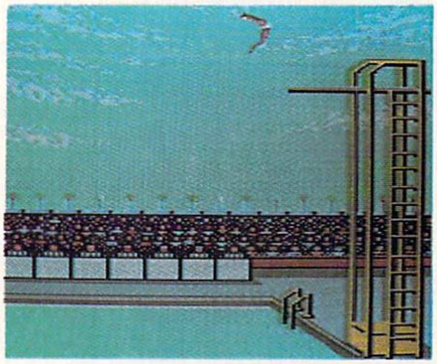
World Games

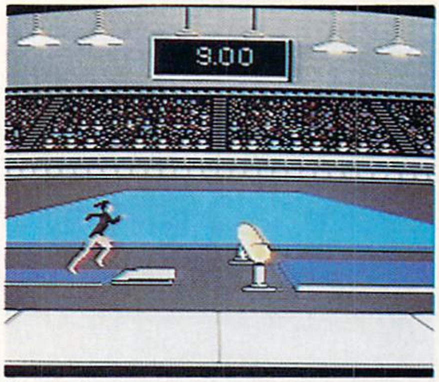
reasons: (1) L.A. Olympics and (2) L.A. Games. *Summer Games* was one of our first choices after that. It was a strong title that kept us out of trouble.
Jermaine: When the Soviet Union boycotted the 1984 Olympics, did you ever consider dropping them from the roster of nations?
Botch: The Russian announcement caught everybody off guard (including us). We had already completed a large portion of the program, when the Soviets suddenly proclaimed they would not be present at the games. This new information was the topic of several discussions at Epyx. If we wanted *Summer Games* to accurately reflect what was going on at the 1984 Olympics, the Russians could not be mentioned in the program. Looking at things another way, everyone enjoys competing against the Soviet athletes at the Games. Would it be fair to deny our loyal followers around the world the opportunity to simulate this traditional friendly rivalry? We finally decided to feature the Russians in the program because *Summer Games* wasn't an official Olympic product, and everyone felt we were obligated to give the public what they really wanted.

Incidentally, we sent the Russian Embassy (in Washington, D.C.) several copies of *Summer Games* for the Commodore 64. An enclosed letter stated since they would not be competing in the regular Olympics, at least they could participate in our version of the Games. This package was eventually returned to us with a thank you note, because they only had access to Atari home computers. Our marketing people quickly replaced the Commodore software with Atari material and sent it back. I always wondered if they enjoyed the game, because we never heard from them again.

Craig Nelson was 30 years old when he became the project manager of Summer Games. *Once that program was completed, he went on to direct the development of* Summer Games II *and* Winter Games. *Here's Craig's story of how these classic computer games came into being.*
Jermaine: Tell me about yourself.
Nelson: I'm presently 34 years old, very single and live in Sunnyvale, California. My interests include electronics, magic and skiing.
Jermaine: Describe the events that led to the making of *Summer Games*.
Nelson: In 1981 Bob Brown and I co-founded a company called Starpath. We wanted to develop a special line of home video games, but the growing popularity of microcomputer software put an end to our long-range plans. Starpath existed for a couple of years before finally merging with Epyx in November of 1983. *Summer Games* was officially started a short time later. Looking back on those days, the merger worked out well for everyone involved. Epyx gained about a dozen technical people from the deal (including a number of badly needed programmers), while we continued doing what we did best: generating games for people who liked to have fun.

News of the merger triggered a series of brain-storming sessions at Starpath. ("Brain-storming," in case you haven't heard the term, is when a bunch of creative minds get together and simply go crazy.) The group discussed a number of possible game ideas (for future projects), but with 1984 being an Olympic year, everyone felt we should take a second look at our Decathlon game. It had never been released to the public. We quickly showed the game to the people at Epyx, and they encouraged me to develop a similar product for the home computer market.
Jermaine: How did the project begin?
Nelson: Brian McGhie and Stephen Landrum (in that order) were the first two programmers assigned to work on the project. The three of us met together, discussed the situation, and quickly made some decisions concerning what we wanted to do. Everyone agreed the new program should be patterned after the concept of the unreleased Decathlon game, with less emphasis on track and field events. The team was equally entranced with the notion of featuring head-to-head competition in every challenge of the game. When all was said and done, however, the swimming and running events were the only contests containing that particular element. Ten events were originally planned for the program, but the time factor eventually reduced that number to eight. One final note of interest: it was decided to make a showable version of the program for the January Consumer Electronics Show (CES), being held in Las Vegas.
Jermaine: Who generated the first event, and how did he do it?
Nelson: From the very beginning, Brian McGhie wanted to work on diving and weight-lifting contests, but the company felt a running event should be done first. Since he was already involved in the planning of the project, Brian was elected to perform this very important task. The 4 × 4 100 Meter Relay was chosen to become the first event of *Summer Games*.
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Summer Games





Winter Games



Science and the Amiga

by Gary V. Fields

Since the beginning of history only the rich or those willing to make great physical or financial sacrifices were able to explore and expand their horizons. But because of the flexible and powerful Amiga software coming to the market, we all can afford to explore our own personal frontiers. With the Amiga and the right software you can trace the constellations in the night's sky without an expensive telescope, go beyond the moon and actually explore the planets, and try your hand with a scalpel without shedding a single drop of blood. Here's a look at the software that makes these things possible.

We were all born with a curiosity about our universe. As children, much of our time was spent learning about our environment. We learned by feeling and tasting everything we could reach and listening to every sound that touched our ears and examining every object our eyes caught. Everything was interesting and we used every means at our disposal to explore. In a real sense of the word, we were all young scientists, testing and gathering facts.



JESSE HULSE

It has been scientists (whether they carried that title or not) who have pushed back the curtain of ignorance and provided the catalyst which has kept this world changing. Scientific studies themselves revolve within an endless cycle where each answered question generates a new question. And now the Amiga is helping turn the wheels which drive research, exploration, fact collecting—the never-ending knowledge-finding cycle. With its powerful processor, detailed graphics and realistic sound capabilities, it is a perfect tool for expanding and exploring our horizons. Now we can all test both our simple and outrageous hypotheses, examine the earth, study human anatomy, and even explore the universe.

As soon as the Amiga was introduced, software developers realized it was a machine which would free them to push their ideas (and their programmers) to the limit. Until then, a machine capable of creating the environments needed to satisfy the exactness (powerful display and sound abilities) of real life was not available to the general public. The Amiga changed that. Because of these possibilities, much of the new software coming to the Amiga market does not fit into any single, established software category (business, entertainment, utilities, languages, educational, etc.). If they were to be labeled, this new breed of software would have to be called something like "edu-science" because it blends science subjects with educational benefits. While much of the new software is strictly science related, other titles cross over the vague line between the two—having both educational and scientific value. But this merging of science and education is actually true to life, since science is nothing more than the focused quest for knowledge, which is the foundation of every good education.

With those truths in mind, let us look at some of the unique software which is surfacing for the Amiga.

What Is Science?

Science: *(1) Knowledge. (2) Systematized knowledge derived from observation, study and experimentation. (3) The systematized knowledge of nature.*

Regardless of what you thought of the homework assigned by your high school science teacher, observing, studying and experimenting is both natural and healthy. We all do it whether we think about it or not. Each time you read a newspaper, turn on your TV, speak to a neighbor or try out a new restaurant you are expanding your library of information.

It could be argued that all our endeavors are rooted in discovering facts. When you play a game (whether on a computer or playing field), your objective is the same—to discover facts about your opponent and then use them and your skills (usually developed through trial and error) to out score your foe. We normally label this exercise in "applied research" as entertainment. Human nature thrives on learning facts and applying them, and it doesn't matter whether it's done on a tennis court or research lab. Regardless, humans enjoy learning and good edu-science software makes serious learning enjoyable as well.

Astronomy: *The science of the stars and other heavenly bodies, dealing with their composition, motion, relative position, size, etc.*

Jupiter is the giant planet. Its equatorial diameter, 88,600 miles, is eleven times as great as the earth's diameter, and its mass is greater than the combined masses of all the other planets. But, despite Jupiter's size, if you ever hope to see it in the night sky, you must first know where to look and when. In short, you must know something about astronomy. If you want to gaze at the heavens

> If you want to gaze at the heavens without risking a cold, the Amiga is where you should focus your eyes first.

without risking a cold, the Amiga is where you should focus your eyes first.

One of the first serious entries into the scientific software field for the Amiga was astronomy related, and the list is growing. The quality and possibilities the present batch of star gazer packages offer are astounding.

Infinity's *Galileo V1.0* was the first detailed and serious astronomy program I had ever tried. However, that quality program has already been replaced with an improved version 2.0. Like all astronomy programs, it should be used with the room lights out, so the only light you see comes from the star pixels on your display window. Because the Amiga is able to display an almost infinite number of shades of a color, the displayed star fields appear to be truly three dimensional. Using a database of over 1600 stars, the program has the ability to accurately create the night sky as it appears tonight, or any night in the past 400 years (or as it will appear in the next 400 years, if you prefer). If you want to view the stars that twinkled above Napoleon as he faced Waterloo or those that shown on Lincoln as he scribbled his address for Gettysburg, you can recreate them here. Both are possible because you can view the stars and constellations from any point on the earth.

Experienced and beginning star gazers alike will find *Galileo*'s ability to outline constellations, identify individual stars or planets or even display a solar eclipse, hard to resist. You can view all this with nine degrees of brightness and varied magnifications. And because viewing and searching is all controlled by the computer, changing viewing point (location on earth), identifying objects, and switching years, is all done by fast, simple mouse controls and self explanatory pull-down menus.

Mindscape's *The Halley Project* qualifies as an edu-science title, because it perfectly blends the exploration of our solar system in the format of an educational game. For the young astronomer, this product is a must. It lets youngsters pilot a spaceship into deep space where they must navigate by the stars. The program uses animated graphics to introduce the effect of different sized planet's gravity, constellations, orbiting patterns of the planets and moons and even comets.

I wish I could tell you more about the astronomy program called *Planetarium,* but at this writing the program is still under development. The people at MicroIllusions boast that the program will support a database with over 9000 stars and allow the user to view skies over a 20,000 year span. If all this is true, you will be able to use it to recreate (among other things) the sky above Bethlehem just before Christ's birth to search for the star the three kings followed. If you want to see the skies Alexander the Great conquered beneath, you should be able to do it just as easily with *Planetarium.*

I'm always on the lookout for good public domain software for my systems and so was delighted when I found *Amigazer* on Q-Link. Using graphics and menus similar to *Galileo*'s, the program lets you view and identify constellations and individual stars. As an introductory-level astronomy program, you can't beat this one's features and price (free).



Medicine: *The science and art of diagnosing, treating and preventing disease.*

The first Amiga software entry in the medical field is called *The Surgeon* from ISM, Inc. While the program is marketed as a game, it accurately simulates a real medical operation on a human body and the repair of an aneurysm. Using true-to-life graphics, it lets you assume the role of a surgeon in the operating room.

Relying heavily upon medical terminology, the program requires you scrub, apply antiseptics, administer antibiotics, and while maintaining the patient's blood pressure and vital signs, open the abdominal cavity. Next you must find and repair the weakened blood vessel and finally close. Before you master *The Surgeon* you will have learned, among other things, the difference between a scalpel and ligation and lidocaine and dopamine as well as how to use an intestinal bag. The program includes everything required to simulate a real operation, including blood. This one is not for those with a weak stomach.

While *The Surgeon*'s subject is restricted to only one type of operation, it simulates it well. But more importantly it hints at the Amiga's potential contribution to the medical profession. While operating on a screen display using a mouse will never satisfy the learning requirements of using an actual scalpel on flesh, software operations could become a powerful, safe and affordable step in the education of medical students. (And remember, after four tough hours in O.R. you can always unwind and enjoy that "MD" feeling by getting in nine holes with a good golf simulator.)

People Meter is a unique and curious product which loosely fits into the medical category of edu-science software. Basically, it lets the user measure stress levels. The current version is sold as a novelty item rather than a medical tool, but it is a product with potential and is worth mentioning.

People Meter comes with a disk, a small silver box which connects to the Amiga's joystick port, and two wire sensors which attach to the finger of the "patient." After the hardware is calibrated, a software gauge displays the wearer's changing stress level. The current version of *People Meter* comes with two entertaining demos which show how increased stress levels can be detected and what effect stress has on the user. While these programs are entertaining (especially at parties where you can experiment with guests), they don't offer any medical benefits or treatments—yet.

We live in a world where stress levels and the accompanying high blood pressure ailments are serious and deadly facts of life. For thousands of Americans, detecting, treating and eliminating stress is not a game but a battle for health. The *People Meter,* with the right software could be part of that treatment. The first version of the product only touches on the possibilities, perhaps later versions will provide true medical assistance.

Impressive medical-related software is even surfacing in the public domain and shareware market. One good example is *Heartbeat.node,* an animated tutorial of the human heart which can be down-

> The Amiga excels in its ability to simulate environments perfect for exploring and answering the questions "what if" and "why."

loaded from the PeopleLink network. Using an animated cutaway view of the heart, the program not only shows how this combination of muscles and valves does its miraculous work, but also shows how the blood flows and includes a synthesized voice explaining the process. So, whatever your field of interest, I suggest you look into PD and Shareware software as well as commercially packaged titles when looking for any science-related programs.

Geography: *The science dealing with the surface of the earth, its division into continents and countries, and the climate, plants, animals, natural resources, people and industries of the various divisions.*

At this writing, geography-related software deals primarily with the earth's surface in North America, but hopefully new releases will expand into the subject's other divisions including natural resources, climate, other land masses, etc.

Deluxe Maps, marketed as a creativity aid, is a collection of hi-res screens depicting the continental United States. Because each screen is stored as an IFF file, the maps can be loaded into most paint programs or accessed directly from BASIC. Because the maps are IFF files, you can edit, paint, realign and size each to suit your needs. If you need maps for overlays or graphics or just need one to include in a document you are publishing, these collections are ideal. Hopefully, future releases will include maps of other areas of the earth as well as more detailed areas.

Great States II is an animated, graphic edu-science tutorial which contains information about the various states, including shape, size, historical facts, nicknames and more. But just as importantly, the program displays informative maps showing topographic features, population densities, rain fall, vegetation, etc. The program is divided into a teaching and a testing mode. As a teaching tool, the program displays a map of the United States and then lets the user collect information (topographical, population, etc.) about selective areas. Later the testing mode of the program queries the user on what he has learned by asking questions and scoring the student's response. I found *Great States II* a perfect example of what a good edu-science package should do. (Teachers needing geography-related software should also consider the Discovery series, mentioned later in the article.)

Physics: *The science dealing with the properties, changes, interaction, etc., of matter and energy (mechanics, thermodynamics, optics, acoustics, etc.). 2. Physical properties or processes: as the physics of flight.*

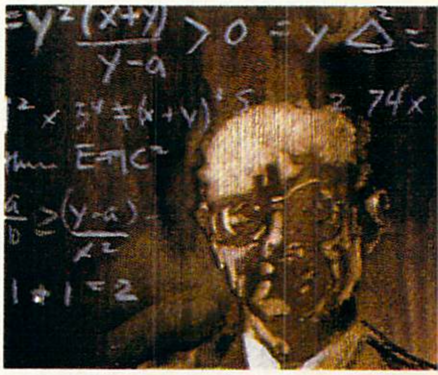
It is difficult to separate the sciences into neatly-defined categories, especially when you are talking about physics. But primarily, physics deals with matter and how it changes or moves. I found no software that dealt with this science directly, but there are several programs which can be applied to this science. Most of the software discussed below in the section on mathematics will relate in one way or another to the studies involved in physics.

Four specific programs which hold potential for those interested in showing the relationships between matter are *Forms In Flight, VideoScape 3D, Sculpt 3-D* and *PIXmate.* Matter can exist in three natural states: solids, liquids or gases, and the molecular structure of each is fixed. Although not designed specifically for such study, *Forms In Flight, VideoScape 3D* and *Sculpt 3-D* give the user the power to construct three-dimensional perfect screen replicas of matter (in any of the natural states). Once defined, the material can be studied from any viewpoint and can even be animated (*Sculpt 3-D* requires *Animate 3-D* for this) to illustrate its physical properties: motion, light, heat, magnetism, etc. In the hands of a talented teacher, these programs supply the power to create accurate and attention-keeping teaching lessons.

PIXmate uses the same techniques used by NASA to allow the user to manipulate graphics. The program (using a system it calls "HistorGraphic Equalizer") lets you selectively adjust and enhance graphics or digitized photographs. For years, deep space probes have sent NASA information (photos) back using digitized code. That information was decoded and displayed in coarse black and white photographs. The color and detail hidden in the photograph were then reconstructed by selectively changing the shades of grey.

PIXmate lets the Amiga user do the same. The scientist (or physics teacher) can use the program to separate details in a graphic or digitized photograph to reveal the information which is interesting or important—perhaps to show the heat patterns released in an explosion or separate the chemical composition of an ore sample.

These programs (and others similar ones) are tools which a physicist can use to examine and test matter and its properties. Combined with the math-related software (below), these are the foundations of a powerful arsenal of physic-related utilities which both scientists and physics teachers can use.



Mathematics: *The group of sciences (arithmetic, geometry, algebra, calculus, etc.) dealing with quantities, magnitudes and forms and their relationships, attributes, etc., by the use of numbers and symbols.*

I confess, I spent much of my younger years attempting to avoid math classes. For some reason, in my formative years, I developed a fear of math. But despite my efforts to skirt the math department in college, I somehow ended up with math as my second minor (although my grade average was nothing to brag about). Today, after seeing some of the powerful math-related Amiga software, I honestly believe I could go back and ace most of my math classes. Due to the efforts of some very bright (and sensible) programmers, learning math principles or exploring math formulas on the Amiga today could almost be described as fun.

Math concepts are usually processed mentally (even though they have visual counterpoints) because plotting them graphically is usually difficult and time consuming—but not anymore. Math-related software for the Amiga lets you

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JANET STREET

How to Write Programs for Publication

by Mark Jordan

Since the beginning of the home computer revolution millions of words have been written describing the many potential uses of computers: from checkbook management to word processing to telecommunications to education to entertainment. And many of these claim to have come true (though checkbook management was a bit overblown). But one of the best uses of the home computer has received scant attention from the media—the computer as a gateway to getting published.

It seems ironic that writers have overlooked this topic. Perhaps it's just the secrecy that specialists and magicians have always relied on to keep their status. Whatever the reason, this "use" of a home computer is not an insignificant one. Consider in the Commodore community alone there are six "big-time" monthly magazines with circulations over 50,000: *Commodore Magazine*, *Run*, *Compute!'s Gazette*, *Ahoy!*, *Info* and *AmigaWorld*. Two others have fairly large circulations but are not monthly: *Amazing Computing* and *Transactor*. Then there are *Twin Cities 128*, *RoboCity News*, and *Money Machine Magazine*—smaller magazines, but with growing circulations.

Now add to those stats magazines such as *Compute!* and *Computer Shopper*. While neither specializes in Commodore computers, both have a section dedicated to our favorite machines, and both are buying articles related to Commodores. Add further to the list the magazines such as *Family Computing*, *Personal Computing* and *Byte* that slip in occasional Commodore pieces, and you've got, well, a pretty big market.

According to my calculations, somewhere between 100 and 200 magazine articles are published each month, devoted to Commodore computers. Using an average of 150 and a rough calculation that 80% of the articles come in from freelance writers, that means 1440 articles per year are cranked out by people just like you and me. It takes more than talent, brains and creativity to get published: It takes perseverance and market savvy. Perseverance is up to you. Market savvy is what this article is all about.

According to my calculations that adds up to somewhere between 100 and 200 articles a month that are published just devoted to Commodore computers. Let's take an average of 150 and multiply that by 12. Wow! Approximately 1800 articles a year. Now how many of these are freelance articles, submitted by non-staffers? Again I will make a rough calculation that 80% of the articles published came in "across the transom" (*Programmer's Market* confirms this). That means 1440 articles were cranked out by people just like you and me.

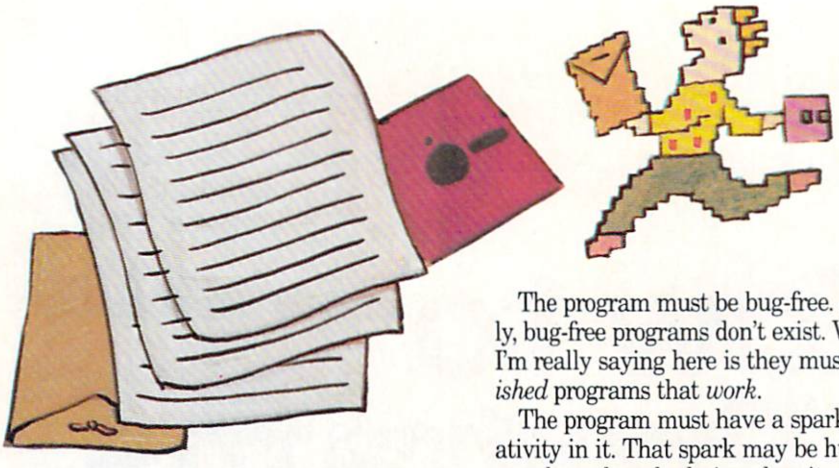
Have I made my point? A market is out there. It exists. Have you ever heard of Richard Mansfield? Mike Konshak? Benn Dunnington? These are people who started out by submitting articles to magazines and got published. (Well, Benn Dunnington, editor of *Info*, kind of cheated. He just out and out started a magazine to assure that he'd get published.) None of these people were famous before they bought their own personal computers and started messing with them.

You can join them. I'll be honest: it takes more than talent, brains and creativity to get published. It takes perseverance and market savvy. Talent, brains and creativity I cannot help you with, but let me assure you—it takes less of these traits than the next two. Perseverance is up to you. Market savvy is what this article is all about. Actually, if you have market savvy, you'll be surprised how much your perseverance will grow.

What to Write About

Every building has a door, no matter how well-hidden. Likewise, every field of human endeavor has a starting point, even for the absolute beginner. Magazine article writing is no exception. I am going to get straight to the point: the way to enter computer magazine writing is via the program/article.

If you glance through the table of contents of any Commodore-specific magazine you'll see a wide range of articles. There are technical pieces, software reviews, feature articles, and the ubiquitous how-to pieces. But many of these articles are written by staff writers or regular con-



> I am going to get straight to the point: the way to enter computer magazine writing is via the program/article.

tributors. The program/article is the freelancer's domain. Freelancers have an advantage over regular columnists: they can tinker with a program for months before they get it just right. They are not under pressure to get out a new idea each month. Plus they are hungrier. Getting in print that first time is a big kick: it's enough to make you stay up late working.

Now I'm going to narrow the field even more: write games. Editors and experience tell me that games are most likely to get typed in by readers. The games arena again favors the freelancer, because good ideas for games cannot be conjured up at the command of an editor. In designing games the novice is not at a great disadvantage with the programming expert simply because good ideas are what make good games, and anyone can have good ideas. Furthermore, games are as good a way to get really good at programming as there is.

Okay. I've proved there's a market. We've found the doorway in. And it isn't just any doorway but the widest one—game writing. Move over, Hemingway. The world of authors is about to expand.

Game Design

Magazine games have several automatic design limitations which you should know about. Break these rules and no matter how good your game is, you won't get published.

The program must be fairly short. Twenty blocks on the disk or less is best. I've sold programs as long as 30 blocks, but that was pushing it.

The program must be bug-free. Actually, bug-free programs don't exist. What I'm really saying here is they must be *finished* programs that *work*.

The program must have a spark of creativity in it. That spark may be humor. It may be a cleverly designed sprite. It may be unusual game play or premise. Something about the program must cause the program reviewer to say, "Hey, I like that."

Those are the must-have. Here are the should-haves:

Sprites. If you are designing your game on the Commodore 64 or 128, it is almost imperative that you make use of the VIC chip's most adorable creatures. I believe sprite design is far more important than screen graphic layout. The sprite is a character—the player's alter ego—and is the focus of interest. It can move, disappear, blow up . . . it's what computer games are all about.

However, it's not enough just to insert a couple of trite sprites on the screen (you know, the stick man with a smiley face). You must use them wisely. Each sprite gobbles 64 bytes of precious memory and 20 blocks comes all too soon. So make your sprites count. There are ways to condense your sprite data, but even still you must "write tight." Check out "Sprites—You Gotta Have 'Em" following this article for more specific sprite-writing tips.

Your game should be easy to learn to play and hard to master. That's a tall order, I know. But at least we can make sure that the game is easy to play. As you develop your game idea, ask your non-computer friends or relatives to try it. You'll quickly discover if it's too hard to learn. (Don't get mad at them; they are telling you what an editor won't have time to.)

A little music and/or sound effects never hurt anybody's chances of getting published. It doesn't have to be much, and don't waste lots of valuable program blocks on a fancy musical introduction (or title screen for that matter). But a winner's flourish or a Bang! or Pow! now and then are excellent interest-creators. Use them.

It's best to make your game a one-player game. At least give that option. There's nothing wrong with two-player games, but many users want something to play as soon as they get it typed in.

Humor is a wonderful ingredient. You can add humor to any game in many ways: a funny sound effect, a memorable sprite character (remember *Q-Bert*?), an unusual animation, a surprise maneuver, etc. Humor cannot be quantified and studied, but be aware that it is a very useful tool . . . and remember, editors are in better moods after they've laughed.

Getting a good game idea to fit the above criteria may seem a daunting task. It isn't. Game possibilities abound. You could: do a copycat game (with improvements) of a commercial game, do a sports simulation, do a maze game, a shoot-'em-up, an avoid-the-monster game. Most likely, you've already got a good game idea you'd like to write into a program.

Writing the Article

You may think that writing the article is the hardest part. Or maybe you think it's the easiest part. You may even think the article superfluous. It isn't. While it is unlikely that a poorly written article ever caused an excellently written game to go unpublished, it is quite likely that several average games made it to print because of well-written accompanying articles. You have to realize that the article is the hook that gets readers willing to take the time to type in that listing, no small task indeed.

Good articles must follow all the conventional rules of good writing, particularly the rules of good how-to writing. It has often been said of journalism and how-to writing that there are simply three parts: first you tell 'em what you're gonna tell 'em, then you tell 'em, then you tell 'em what you told 'em. Here's an outline you can use based on that three-stage formula:

I. Hook 'em Intro (usually one paragraph)
II. Explanation of Program
  A. General rules of typing program
  B. How to play the game
  C. How the program works
III. Encouraging Summary (one paragraph)

With games, the "Hook 'em Intro" is simply a catchy brief description of the game. Check out any articles for games in your computer magazines, and you'll discover this is how virtually all of them begin. This is your introduction, and it is

imperative that it "hook" the reader. You don't need to be cutesy or overly clever . . . you simply need to get the reader's attention. Here, as always, humor never hurts. I repeat—hook your reader!

Here's an example of an introduction I wrote for a program/article called "Jungle Heat" (*Commodore Microcomputers*, October 1985). The technique I used was simply to describe the action in exaggerated language.

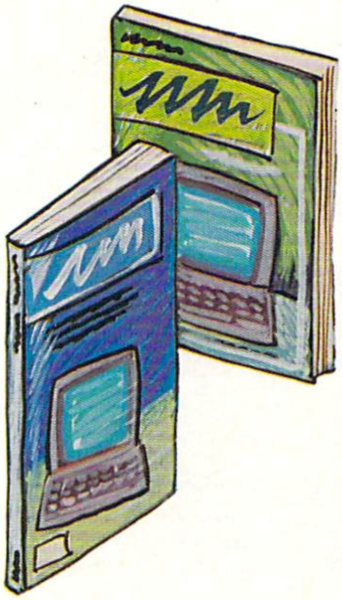
> "The heat is oppressive, the air stifling. All the animals of the jungle are hidden, silently watching. Two figures emerge from the brush, eyes flashing and deadly. A gunshot is heard. The twosome begin a race through the tropics that simply defies description. The name of the game: 'Jungle Heat.'"

The introduction is usually only a paragraph long. After that it's time to start explaining your game. High school English teachers call this the "body" of the article. For journalists it's the "tell 'em" stage. There are three distinct phases of this process.

The first thing you must tell your readers is how to type in the program, how to save it, how to use the magazine checker program (if there is one), etc. For experienced users this paragraph (it's usually just one) gets skimmed. But you as writer must not omit this important paragraph because many of your potential typists are newcomers to the computing realm. They need all the help they can get in typing in programs.

The second part of the "tell 'em" phase is to describe how to play the game. Start to finish. Only you will know how to do this, so I can add very few guidelines. But a few constants have emerged in the past ten years of game how-tos:

- Tell the object of the game at the top.
- Describe the opening sequence and tell the reader what he should do at the start.
- Don't waste words describing the screen or action that will immediately become apparent upon playing the game.
- Warn the player of pitfalls, hazards, etc., and describe the idiosyncrasies of the game.
- Be sure the user knows which port to plug his joystick in, how many points it takes to win, and other pertinent information.



You might benefit from reading a copy of *Programmer's Market* by Writer's Digest Books. It has lots of useful information.

All told, this game description should be 300-500 words (a page or two of double-spaced typing).

The third section of the body of your article is optional: you may want to explain your code a little. (Code is jargon for the program itself.) In the early days of home computing, these program explanations were the main reason a lot of folks read the articles. Today there isn't quite the emphasis . . . but don't neglect this entirely. There are still many users, old-timers and newcomers, who like to study program listings. In this section you may give some clues as to how the user can modify the program. Magazine programs seldom can compete with commercial games simply because of their brevity. But they certainly have a leg up on commercial software when it comes to explaining the mysteries of the program code. Besides, an editor can cut out this section easily enough if he deems it unnecessary. He certainly can't add it.

You are ready to crank out section three of your article: "Tell 'em what you told 'em." This is a one-paragraph wrap-up. Often a restatement of the introduction is enough. Perhaps a brief summary of the game is all you want. At any rate, you need to create a short upbeat closing which encourages the reader to type/play your game. The introduction is for hooking the reader; the closing is for inspiring him. For example, "Jungle Heat" might have ended like this (it didn't, but that's beside the point):

> "The animals have come alive, the heat has broken. One figure now stands alone—the victor. It could be you . . . so start typing!"

The Freelancing Business

Sorry to say, writing a good program and a good companion article still won't do the trick. You must learn how to submit it. I've already mentioned the major Commodore markets. Get a copy of any of those magazines and send your programs to the program or technical editor (or just plain editor if no program editor is listed). You might benefit from reading a copy of *Programmer's Market* by Writer's Digest Books. It has lots of useful information.

When you get ready to submit your piece, be professional. You have a computer—use it to help. Send in mistake-free prose. (Don't get uptight about so-called proper grammar, just catch all the typos. Use your spell checker.) Double-space your article. Use page numbers. Include your name, address and social security number at the top of page one. You don't really need to include a cover letter (a letter that accompanies your article/program) but lots of writers do. I don't. You should also include a program listing with your article.

Save your program on a newly-formatted disk and save the article on that disk too. Don't worry that the editors won't have the same word processor you do; they still can make use of your text file. Be sure to label your disk with your name and the program name.

Finally, buy some good manilla envelopes or disk mailers. I use the 6″ × 8″ manilla envelopes into which I place: my article and listing, folded once; the disk; and a piece of corrugated cardboard cut to fit. (Tip: cut it so the corrugation runs the long way.)

Just as game articles must end with a snappy restatement of the entire piece, so too must how-to articles such as this one. So here's my inspirational closing: You can do it. The computer industry is still very young, the "Establishment" a very thin shell and easy to break into. You have talent, you have creativity, and now you have market savvy. All you need to bust into that shell is to begin kicking—not hard kicks, just persistent.

Continued on page 92

by Mark Jordan

geoPublish—Now This is a Program

Welcome to "Pumping GEOS." In the coming months we will explore the GEOS world with: 1) product reviews, 2) GEOS hints and tips, 3) technical info about GEOS, 4) type-in programs running under GEOS, and 5) a whole bunch more. For starters, we're going to look at *geoPublish,* an exciting desktop publishing program from Berkeley.

GeoPublish is an amazing product. If you have never used a desktop publishing program before, you are in for a hot, fresh romance. Like all hot new romances it can get a little complicated at times. But the fact that you can do desktop publishing—and do it well—on a Commodore 64 is a tribute not only to the 64 but also to the engineers at Berkeley Softworks. Even with a no-frills computer setup (no memory expansion, no second drive) you will be able to produce some very nice documents in a reasonable amount of time.

What Is Desktop Publishing?

Good question. Well, here are some things it isn't. It is not word processing with some graphics merged in. Nor is it a graphics program with text capabilities. Those might qualify as desktop publishing in the crudest sense, but true desktop publishing requires much more than that.

For example, a real desktop publishing program should be able to generate columns with justification just like a newspaper. *GeoPublish* does that. It should allow many font sizes. *GeoPublish* does that. It should allow you to flow text around pictures. Ditto. Desktop publishing should make it easy for the user to adjust text and graphics to fill up a page. Ditto again. And it has to let you take advantage of the computer's ability to draw straight borders, save important layouts to disk, and do everything else they do in print shops . . . with greater ease and permanence. Ditto, ditto, ditto.

How Does It Work?

The process goes like this:

First, you type the text you want in your newsletter, poster, what-have-you. With *geoPublish* you can use your favorite word processor if you prefer (instead of



geoWrite) and "text-grab" it with the text-grabber program on the *geoPublish* disk.

Second, you create any artwork you want on the page. Of course, *geoPaint* is a natural for this, but with the help of GEOS's "Graphics Grabber" (on the "DeskPack" disk) you can use clip art from *PrintShop, Newsroom* and others.

Third, you start "geoPublishing" by opening a *geoPublish* document. Three modes are available once you're in the program: Master Page, Page Layout and Page Graphics. Ah, here's where it gets a little tricky.

A **Master Page** is a page layout that will occur on each and every page of your document. For example, if you want a banner at the top of each page with the date and page number, you'll want to do this from the Master Page mode. In this mode you can draw "guidelines" which are later quite useful for aligning columns, graphics, borders, etc. *geoPublish* allows you to have two different master page layouts since two-page (or greater) documents will likely need different layouts for the left and the right pages.

Master Page allows you full use of the graphics toolbox (see sample "geoPublished" document) so that you can create lines, circles, etc. that will appear on each and every page of your document. Master Page is usually the first mode you'll use.

After setting up your master copy, you'll most likely want to go into the **Page Layout** mode. This is the heavyweight of the three modes of operation. In this mode you can incorporate those text files and graphics files you prepared earlier. First, using a rubber-banding tool, you stretch out the areas you want defined for text columns.

This is fun . . . but it gets funner. You now can "pour" your text into those columns. If you include a picture somewhere in the middle, the text even pours around it. You won't get to see the results as it happens, because you'll be staring at a half-screen representation of your entire layout page (much like *geoWrite*'s preview screen). But as soon as the pouring is done you can "ripple" the text (reformat it to fit the column precisely as you've designed it) and then jump into the editor that comes along with the program.

The editor is a kind of condensed form of *geoWrite 2.1.* With it you can change fonts, change justification (left, right or full), or change spacing. Search and Replace isn't there nor are a few other features, but those that you need are available. The advantage is that now that you've poured it onto the page, you know better how you want it to appear. For instance, if you find you have a little left-over space at the end of your column, you can change the font of the entire column until you get it to a size that is just right.

The third mode of operation, **Page Graphics**, appears exactly the same as the Master Page mode, but it isn't. In this phase you will be creating graphics and headlines only for the page you're working on. A Master Page graphic or headline will appear on all pages.

Page Graphics mode gives you the ability to create graphics in a way similar to *geoPaint*'s method. In fact, some of the commands (the "open spline" especially) are better than what's available in *geoPaint.* Unfortunately, no pixel edit is available nor, strangely enough, any pencil drawing mode. I really miss this one. I guess the concept is that you'll do all your finely-edited drawings in *geoPaint* and import them (via the Photo Manager) while you'll use Page Graphics mostly for borders, headlines, and backgrounds. Again, check out the "Pumping GEOS" sample document. Note the banner on the

Continued on pg. 64

Tale of Two Toolboxes

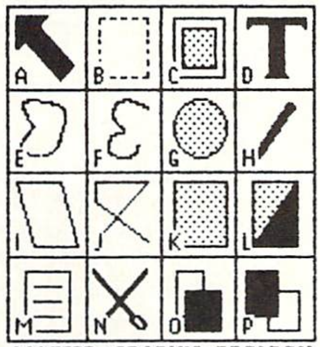
Pumping GEOS

with Mark Jordan

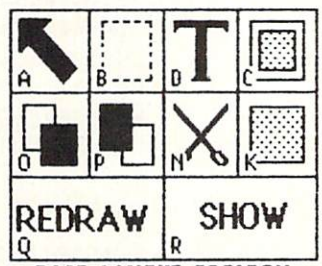
Vol. 1, Num. 1

The manual that accompanies geoPublish is well-written and contains an interesting section on publishing in general. Like all Berkeley manuals, it is concise, almost to a fault. (Actually, it's a good fault -- it gives guys like me a chance to write articles filling in the cracks.) The biggest drawback to the geoPublish manual is the fact that drawings of the two toolboxes in the program are not in an appendix nor on a single page. A lot of page-flipping is necessary to check what icon is what.

To help with the problem, I've recreated the two toolboxes with geoPaint, labelled them, and added comments. I hope this helps you for quick and easy reference in your geoPublishing.



MASTER/GRAPHIC TOOLBOX



PAGE LAYOUT TOOLBOX

A) Pointer: Used to select regions of text or graphics in any mode

B) Select Area: also referred to as "Group Select" on page 4-45. This one selects a group of items for editing. In Page Layout mode this tool is used to open a region for text/graphics placement.

C) Bitmap: for placing imported bitmapped graphics

D) Text: to create, edit, or place text

E) Closed spline: draws interesting enclosed arc shapes

F) Open spline: same as above but unclosed figures

G) Circle/Ellipse: just like geoPaint's but with ellipse

H) Line: draws lines (what else)

I) Polygon: another nice feature lacking from geoPaint

J) Connected line: draws connected lines (obviously)

K) Retangle/square: like geoPaint's square but better

L) Attributes: lets you do neat stuff like pattern-filled squares and circles, change brush shape, etc.

M) Update: updates graphic screen

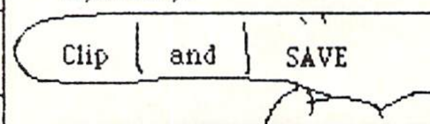
N) Delete: cuts out selected text or graphics

O) Foreground: Also known as "move to front" tool, this lets you place graphics in front of text

P) Background: Also known as "move to back" tool, reverses process above

Q) REDRAW: updates layout screen

R) SHOW: ripples text which means it reformats text precisely as you've instructed throughout your layout design



Print-Hints

1) To make a GEOS printout look great you need a good, dark ribbon. If yours is not one, try this: spray your ribbon with WD-40. If you have the spool type, go outside and stretch it from here to there and spray lightly along the entire surface. Let it air-dry for a half-hour or so. If you have the cartridge type, pry open the lid and spray the whole serpentine mess with solution. Let it air-dry a day or so.

2) If you have an SG-10 printer and you just can't get it to print 80-dpi try this: set dipswitch 2 (on the group of 4) down to simulate IBM mode. Now change your printer choice to the IBM 5152. This works for me.

3) Copy your printouts on a copy machine. To really make it look super, use a pencil or dark pen to fill in any noticeable printer lines prior to copying. Also, reducing your copy will really sharpen it up.

4) Never -- NEVER -- turn your printer on or off while the disk drive is busy. It will lock up faster than a low-paid clerk on a Friday night.

Mouse Specks

Recently I read the lament of one mouse user who wondered why all mousepads were too small. Well, I've got news for that guy: they aren't too small. You can, with Preferences, adjust the mouse's responsiveness. I like a tight mouse response. My goal is to be able to move the cursor across an entire screen in one short move -- about 5 inches.

Also, perhaps the fellow above doesn't realize that the mouse can be picked up, similar to jacking up a car. With just a little practice anyone can quickly get used to the lift-move-and-drop shuffle (which is actually a good aerobic exercise).

Anyway, if the mousepad were as big as that disheartened user might want, methinks it would be too big for his desk.

Continued from page 62

left and the pointing finger on the right: both were done in this mode.

Again as in the Page Layout mode, you can edit and view your document either in the full-size preview mode or in a close-up mode, Zoom mode. Zoom gives you the ability to see, point by point, what the finished product will look like. You need this option not only for fine-tuning your drawings, but also to avoid having to print out your page just to see how everything looks. On my Star SG-10 printer it took 15 minutes to print a page. Get the point?

Even zoom can get a little sluggish, particularly if you don't have memory expansion. *GeoPublish* helps speed things up by allowing you to shut off several of the drawing options, a thoughtful and nice touch from the designers.

Please note that you can do your graphics designing either from the full-page mode or zoom. With the full page you can do things like put borders around entire columns or even the whole page for that matter. You can install large headlines. You definitely need both close-up and full-page drawing options. And don't bemoan the fact that the Commodore 64 cannot show you an entire page pixel by pixel on the screen at one time: no computer can, not even the Macintosh. All require a preview mode of some sort and scrolling features for close-up work. I *am* anxious for an 80-column 128 version so that side-scrolling will be eliminated.

There are many features and options in all modes of operation. As mentioned, this is just an overview. Because this product is so powerful and heading so much in the direction where home computers should be, we will spend time in the next several issues to explore it in greater detail.

BeckerBASIC and other GEOS Stuff from Abacus

Well, I have other pots on the range which must be stirred, such as *BeckerBASIC* from Abacus. I haven't had much time to really get into it yet, but I can tell you this: if you want to do some programming in the GEOS environment but don't have the time, skill or desire to do it in machine language, this is a good place to start. You'll be able to produce programs that run in the GEOS bitmap style, complete with drop-down menus and dialog boxes. Since it resides in memory along with GEOS, there are some memory constraints on the system. Even if you're an experienced BASIC programmer, you'll need to get used to this new environment which is not unlike that of compiled languages like PASCAL.

An interesting capability of this package is that it allows you to change the command names. With over 270 commands available the authors felt that users might have some trouble remembering all the names (with names like "HRGTCOL" and "PBCEND," I concur). All the popular structured commands are available (do/loops, if/then/else, etc.) plus some fancy disk commands that allow pokes to the drive. It's a real BASIC programmer's bonanza. In an upcoming column we'll write a short program using *BeckerBASIC*.

Abacus is first again with good inside documentation on Commodore products. Those of you with 128s know it was Abacus that led the information charge into that machine with *128 Internals* and other books. They have a German connection that seems to scoop the U.S. every time. Anyway, two books from Abacus, *GEOS Inside and Out* and *GEOS Tricks and Tips,* are available. My impression is that both books have good technical information but are a little weak on just plain old tips. Both include type-in programs which you may or may not find useful. (For example, 50 + pages in *GEOS Tricks and Tips* are devoted to a font-maker program. If you already have one, this would be useless to you.)

Tidbits from Berkeley Softworks

A program-writing application tentatively called "Programming Author Tool" is in the works. It will be a simple system that allows parents and teachers (and anyone else) who has zero programming experience to crank out some educational programs for their kids.

Berkeley has been working hard on their version of GEOS for the Apple II family. They shipped it in early April. *InCider Magazine* devoted lots of space to it and gave it very high marks.

Is this good news for us Commodore users? Does this signal an end to Berkeley's support of our machines? Actually, this signals just how much faith Berkeley has in 8-bit computers. In case you haven't noticed, Berkeley is a *BIG* company these days. And it is a big company built entirely around 8-bit computers. Lots of folks seem bent on accelerating the demise of 8-bit computers, but dealing with a company like Berkeley and using a program like *geoPublisher* makes me very confident that the Commodore 64 and 128 will indeed live forever. Or thereabouts.

And on that ethereal note, adieu.

Continued from page 40

and time consuming. The powerful way to create fonts is to use the program's editing tools to load an existing font, make minor or major changes and then duplicate, rotate, shift, magnify, flip, color and fill images until the new font is finished. Then you simply save it to disk with a new name, and it's ready to add to your font directory.

One of *Calligrapher*'s more appealing features is ColorFonts. Rather than limit you to two-color fonts like those found on the Workbench disk (foreground and background colors), *Calligrapher* lets you include up to 16 colors in each font. Those who have color printers or use an Amiga for creating video displays will love the snap and attention colored fonts deliver.

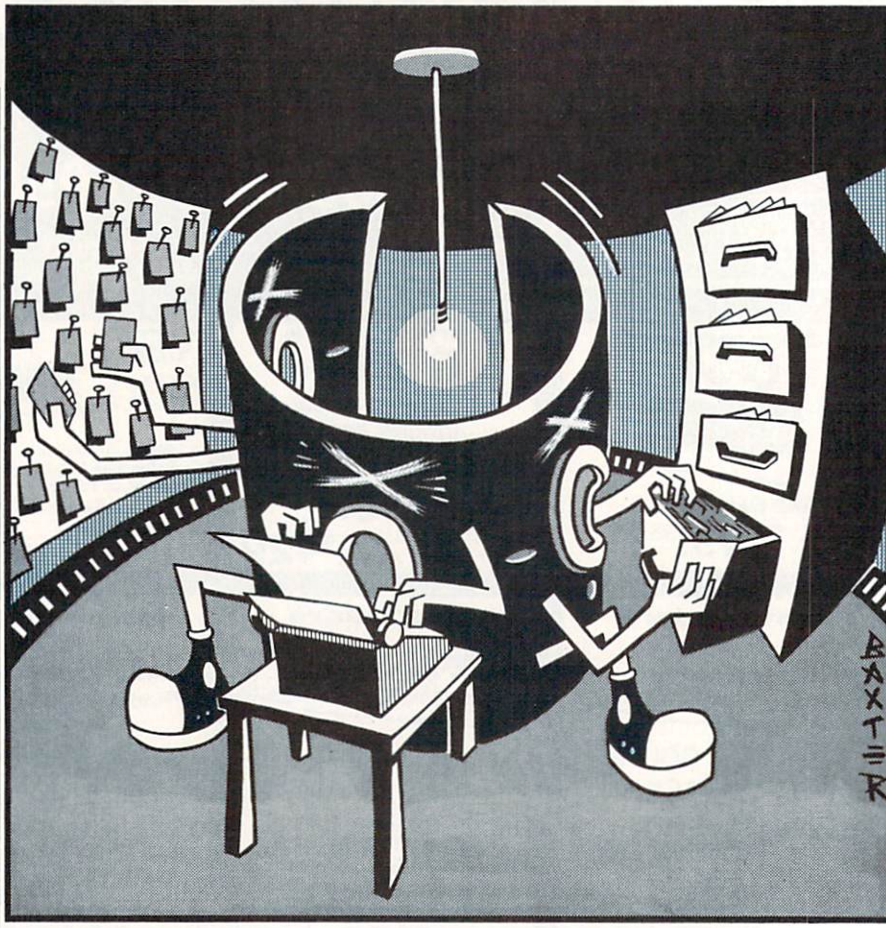
Why should you bother creating your own fonts? First, the ability to mix fonts within text is one of the major appeals of desktop publishing, and a vital ingredient in effective desktop video presentations. So if you want your publication or video presentation to get and keep your reader/viewer's attention, a good place to start is with powerful type displays. Just as importantly, unique fonts are what make logos and mastheads distinct and reinforce the all-important reader recognition. The same user recognition is important for advertising logos, product names, letterheads, etc. Every editor of every publication is always looking for new typefaces which will make their publication more legible, more powerful, more eye appealing and more saleable. *Calligrapher* provides the tools to create those images in-house, rather than being limited to those available commercially. (NOTE: InterActive Softworks markets two programs filled with fonts created with *Calligrapher* called *Newsletter Fonts* and *Studio Fonts*).

Programmers (especially those who use BASIC) who redefine the keyboard symbols for inclusion in arcade-type games will find *Calligrapher* a welcome programming tool. With *Calligrapher* you can try your own hand at creating those special images which appear when a key is pressed. And if you are in need of foreign alphabet fonts, creating those with this product is a option you should consider. *Calligrapher* is not copy protected, so you can easily move it to a hard disk. It comes with a complete manual (including tutorial) which explains everything from kerning to picas. Best of all it includes screen shots of important detail for those new to the world of calligraphy—beautiful handwriting.

by Theodore Lewis

BBS Lister

for the Commodore 64



ART BAXTER

If you belong to many Bulletin Board Services (BBSs), BBS Lister is the organization program for you. Although some terminal programs organize BBS information, it often can't be accessed while online and doesn't accomodate enough information. BBS Lister organizes all the important information that a BBS user should know online and off, and prints it on any 1525 or compatible printer. Below is an explanation of its features and terms.

File Creation: From the Main Menu, choose Option 1 to create a new file and enter the file name. (You may wish to have several BBS data files to separate different groups of BBSs.) You're now ready to start entering data. The following is an explanation of terms:

0—BBS Name: The name of the Bulletin Board Service. After entering information on all your BBSs, hit RETURN at this prompt to close the data file.

1—BBS Number: The phone number of the BBS.

2—User Name: If you're known on different BBSs by different names, you'll appreciate this feature. Simply enter the name you're known by.

3—Password: (Because this field is included, I advise you to keep this sheet from the eyes of others.) For safety, always assign different passwords to different BBSs.

4—User ID: Some BBSs require an ID number as well as a password. Enter that number here.

5—Sysop Name: Sysop is another word for the person who runs the BBS. This is important when leaving E-Mail.

6—Hours: Time when the BBS is up and running. Example: 4 PM - 7 AM.

7—Baud: If you have more than one modem or you need to set your modem to different baud rates, this field will help you to remember what rate to set with each BBS.

8—Distance: Here, enter free if the call is free (an 800 number), local (no charge), toll (outside your local calling area but, not long-distance), or long (for long-distance calling).

If you want to leave a field blank, simply hit RETURN. (Note: To leave the "BBS Name" field blank, press at least two spaces before hitting RETURN.)

After entering this data, you'll be asked if you entered it correctly. If you want to check it, hit "N" and it'll be listed beside a number. (Use the above chart if you forget what number stands for what field.) If it's all correct, hit "N" again at the "Change?" query. If you want to change a particular field, press its number to re-enter it. Or, you may press "A" to redo the entire listing.

Printing Data Files

Newly created files: Choose Option 1 on the Print File Menu to print the file. You need not enter the filename again. Old data files: Choose Option 2 at the Main Menu and Option 2 at the Old File Menu. Next, enter the file name of the correct data file.

After the data file has been successfully opened, you're asked to enter a header that'll appear on the top of each page. You may wish to enter the date, name of the data file or a title. Next, you're asked if you're using fanfold paper or single sheets. For single sheets, you'll be asked to insert a new piece of paper. If you're using fanfold, the paper will automatically roll up. You're now ready to print.

Editing a File

From the Main Menu, choose Option 2 and then Option 1 from the Old File Menu. You'll next be asked to enter the file name and the screen will display "Working . . ." while the disk drive runs. The screen will display the first BBS's data. Use the chart at the beginning of this article if you forget what the numbers correspond to. If you accidentally hit "Y" after the Append query, you may press RETURN at the BBS Name prompt to exit.

Below is an explanation of editing commands:

of entry — To change a single field in a BBS listing, simply press the number corresponding to the field.

All — To rewrite the entire listing, press "A."

Delete — This command will delete the displayed listing from the disk file. After you press "D," you are automatically skipped to the next listing. If you view the deleted listing on the screen, it will have a yellow sign saying "DELETED" to remind you.

Undelete — After scanning through a file, you may decide to keep one of the listings that you previously deleted. To keep the

listing in the file, press "U." As with delete, you will be skipped to the next listing. If you check, you will find that the yellow sign is gone.

+ Next/ − Previous — These commands are used for scanning through the file. To skip to the next listing, press "+". To go back to the previous listing, press "−". When you reach the last listing, pressing "+" will return you to the first listing. Similarly, pressing "−" when at the first listing will send you to the last listing.

"£" — Press this key when you have finished editing your file. After pressing "£" you're asked if you want to add more to the file. Answering "Y" will allow you to enter as many more listings as you want. The count will keep track of the number of entries you've made beyond the end of the file. You may edit these as if you were creating them for the first time. (See "File Creation.")

"F8" — The Universal Escape Key: "F8" is a time saver that allows you to escape to the Main Menu at any time. It's active during any data entry or printing operation. However, if you press F8 while you're editing an old file, it won't save any changes you've made. But as a quick exit from Create File, it works well.

Notes: You may wish to create a completely blank data file so that while you're online, you can enter the information by hand into the chart.

For further editing, you can use any word processor that saves and loads sequential files such as *Easy Script* and *Wordpro 64*. Make sure that the RETURN character directly follows each entry.

The name and length of each field can be changed with a little work. Use the following lines as a reference:

1230-1330—The name of each field is listed here. Variable SO is the length of each field.

1820-1888—Here, A$ is the BBS Name, B$ is the BBS Number, and so on. To change a field length, change X in this example: SPC(X-LEN(A$)). The variable SO and X in the example above should always be equal. The field lengths should sum to 222.

Sample printout.

```
BBS Lister : BBS List
Page:  1
.-----------------------------------------------.
|BBS Name: Duck Soup                            |
|Number: 1-555-555-5555                         |
|User Name: Groucho                             |
|Password: Swordfish                            |
|Sysop Name: Harpo                              |
|Hours: 24 hr.                                  |
|Baud: 1200                                     |
|Distance: long                                 |
'-----------------------------------------------'
```

I hope you find this program useful as well as flexible. With a little work, it can even be adapted to organize information other than BBS information. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

BBS Lister

```
10 POKE 53280,0:POKE 53281,0
   :PRINT"[GREEN]"'DQWC
40 REM ----MAIN MENU----'BQFE
50 CLR:DIM FILE$(360,1)
   :PRINT CHR$(14)CHR$(8)'FVJI
60 T1$="[DOWN3,YELLOW,SHFT *3,WHITE] "
   :T2$=" [YELLOW,SHFT *3,GREEN]"'CHYL
80 PRINT"[YELLOW,CMDR U40,GREEN]"'BALJ
90 PRINT TAB(15)"[WHITE,SHFT M]AIN
   [SHFT M]ENU[GREEN]"'CDLK
100 PRINT TAB(4)"[DOWN]1 - [SHFT C]
    REATE A NEW FILE"'CCEC
110 PRINT TAB(4)"2 - [SHFT W]
    ORK ON AN OLD FILE"'CCHD
120 PRINT TAB(4)"3 - [SHFT Q]UIT"'CCCB
130 PRINT TAB(8)"[DOWN,SHFT C]
    HOICE?"'CCFC
140 GET GE$'BDFA
150 IF GE$="1" THEN 1080'DHRD
160 IF GE$="2" THEN 210'DGOE
170 IF GE$="3" THEN END'EDVF
180 GOSUB 1960'BERE
190 GOTO 140'BDEF
200 REM ----OLD FILE MENU----'BTRB
210 PRINT"[CLEAR]":PRINT TAB(10)T1$"
    [SHFT O]LD [SHFT F]ILE [SHFT M]
    ENU"T2$'DKBG
220 PRINT TAB(4)"[DOWN]1 - [SHFT E]
    DIT [SHFT F]ILE"'CCID
230 PRINT TAB(4)"2 - [SHFT P]RINT
    [SHFT F]ILE"'CCQF
240 PRINT TAB(4)"3 - [SHFT M]AIN
    [SHFT M]ENU"'CCNF
250 PRINT TAB(8)"[DOWN,SHFT C]
    HOICE?"'CCFF
260 GET GE$'BDFD
270 IF GE$="1" THEN 330'DGQG
280 IF GE$="2" THEN 1580'DHXH
290 IF GE$="3" THEN 50'DFTI
300 GOSUB 1960'BERX
310 GOTO 260'BDHY
320 REM ----EDIT OLD FILE----'BTCE
330 PRINT"[CLEAR]":PRINT TAB(12)T1$"
    [SHFT E]DIT [SHFT F]ILE"T2$'DKOH
340 PRINT TAB(4)"[DOWN,SHFT E]
    NTER FILE NAME:":SO=16:GOSUB 2290
    :NAME$=WD$'FVIN
350 OPEN 1,8,4,"0:"+NAME$+",S,R"'DLWH
360 DCT=1:X=1:GOSUB 2020'DMOH
370 IF ERR=1 THEN CLOSE 1:ERR=0
    :GOTO 330'GOTL
380 PRINT TAB(4)"[DOWN2,SHFT W]
    ORKING..."'CCOJ
390 INPUT#1,IN$'BFFH
400 FILE$(X,0)=IN$'BNGB
410 IF ST AND 64 THEN CLOSE 1:CLOSE 15
    :L=1:CT=1:GOTO 450'ITXI
420 X=X+1'CDKC
430 GOTO 390'BDLC
440 REM ----SCREEN PRINT
    ROUTINE----'BBFJ
450 PRINT"[CLEAR]":PRINT TAB(12)T1$"
    [SHFT E]DIT [SHFT F]ILE "T2$'DKQL
460 PRINT TAB(8)"[DOWN,SHFT L]ISTING
    [WHITE]"L"[GREEN]OUT OF [WHITE]
    "X/9"[GREEN,DOWN]"'DFIM
470 IF CHA THEN PRINT"[CLEAR]"
    :PRINT TAB(11)T1$"[SHFT C]HANGE
    [SHFT D]ATA"T2$"[DOWN]"'FNVP
480 IF FILE$(CT,1)="D" THEN PRINT "
    [YELLOW,RVS,SHFT D,SHFT E,SHFT L,
    SHFT E,SHFT T,SHFT E,SHFT D,RVOFF,
    GREEN]"'ELRS
490 PRINT TAB(4)Q1" - "FILE$(CT+Q1,
    0)'DRKN
```

```
500 IF INT((CT+Q1)/9)=(CT+Q1)/9 THEN
    530'ITRI
510 Q1=Q1+1'CFTC
520 GOTO 490'BDMC
530 PRINT TAB(4)"[DOWN,SHFT C]
    HANGE? ([WHITE]#[GREEN] OF ENTRY/
    [WHITE,RVS]A[RVOFF,GREEN]LL";'CDJL
540 IF CHA THEN PRINT"/[WHITE,RVS]N
    [RVOFF,GREEN]O)":GOTO 580'EHII
550 PRINT")":PRINT TAB(12)"([WHITE,
    RVS]D[RVOFF,GREEN]ELETE/[WHITE,
    RVS]U[RVOFF,GREEN]NDELETE)"'DENM
560 PRINT TAB(12)"([WHITE,RVS]+[RVOFF,
    GREEN] NEXT/[WHITE,RVS]-[RVOFF,
    GREEN] PREVIOUS)"'CDKN
570 PRINT TAB(12)"[DOWN,SHFT H]IT
    [WHITE,RVS,POUND,RVOFF,GREEN]
     IF FINISHED."'CDPN
580 GET GE$'BDFI
590 IF GE$="N" AND CHA THEN Q1=0:CHA=0
    :GOTO 1420'HTBR
600 IF GE$="+"AND CHA=0 THEN Q1=0
    :GOTO 700'HOSH
610 IF GE$="-"AND CHA=0 THEN Q1=0
    :GOTO 720'HOWI
620 IF GE$="D"AND CHA=0 THEN EDT=1
    :Q1=0:GOTO 870'ITUL
630 IF GE$="U" AND CHA=0 THEN Q1=0
    :GOTO 890'HOPL
640 IF GE$="[F8]" THEN CLOSE 1
    :GOTO 50'FHAJ
650 IF GE$="[POUND]" AND CHA=0 THEN
    Q1=0:GOTO 780'HOUN
660 IF GE$="A" THEN ALL=1:EDT=1:CA=1
    :GOTO 1150'HVHP
670 IF GE$=""THEN 580'DGXK
680 IF ASC(GE$)>47 AND ASC(GE$)<57
    THEN 740'HRSQ
690 GOTO 580'BDMK
700 L=L+1:IF L>X/9 THEN L=1:CT=1
    :GOTO 450'JRLL
710 CT=CT+9:GOTO 450'DJFG
720 L=L-1:IF L<1 THEN L=X/9:CT=X-8
    :GOTO 450'KSYO
730 CT=CT-9:GOTO 450'DJGI
740 EDT=1:CA=1'CIVI
745 ON (VAL(GE$)+1)GOTO 1150,1230,
    1250,1270,1280,1290,1310,1320,
    1330'ECPW
750 CA=0:Q1=0:IF CHA THEN PRINT"
    [CLEAR]":GOTO 470'GPXN
760 GOTO 450'BDII
770 REM ----APPEND SEQ FILE----'BVIN
780 PRINT"[CLEAR]":PRINT TAB(11)T1$"
    [SHFT A]PPEND [SHFT F]ILE"T2$'DKFR
790 PRINT TAB(4)"[DOWN,SHFT D]
    O YOU WANT TO ADD ANY MORE TO
    THIS FILE? [WHITE](Y/N)[GREEN]
    "'CCYY
800 GET GE$'BDFD
810 IF GE$="N" THEN 920'DGAG
820 IF GE$="Y" THEN EDT=1
    :GOTO 850'FLOK
830 IF GE$="[F8]" THEN 50'DFII
840 GOTO 800'BDHH
850 APP=1:X=X+9:CT=X-8:GOTO 1130'GSLP
860 REM ----DELETE----'BOTL
870 IF CT=0 THEN FILE$(1,1)="D"
    :GOTO 700'FRFQ
880 FILE$(CT,1)="D":GOTO 700'CPRO
890 IF CT=0 THEN FILE$(1,1)=""
    :GOTO 700'FRRR
900 FILE$(CT,1)="":GOTO 700'CPXH
910 REM ----WRITE ARRAY TO SEQ
    FILE----'BCWL
920 IF EDT=0 THEN 1040'DIGI
930 PRINT"[CLEAR]":PRINT TAB(7)T1$"
    [SHFT R]EWRITE [SHFT D]ATA
    [SHFT F]ILE"T2$'DJDQ
940 PRINT TAB(4)"[DOWN,SHFT I]
    NSERT CORRECT DISK AND PRESS ANY
    KEY TO CONTINUE."'CCEW
950 GET GE$:IF GE$="[F8]"THEN 50'EJRN
960 IF GE$=""THEN 950'DGYM
970 OPEN 15,8,15,"S 0:"+NAME$+""'DNJP
980 CLOSE 15:OPEN 1,8,4,"0
    :"+NAME$+",S,W"'EOLS
990 GOSUB 2020:IF ERR=1 THEN CLOSE 1
    :ERR=0:GOTO 920'HTNU
1000 FOR FR=1 TO X'DEWU
1010 IF FILE$(FR,1)="D" THEN FR=FR+8
     :GOTO 1030'GVDC
1020 PRINT#1,FILE$(FR,0)'BNAX
1030 NEXT FR'BCAW
1040 CLOSE 1:CLOSE 15:PRINT TAB(4)"
     [DOWN,WHITE,SHFT D]ONE.[GREEN]
     [SHFT P]RESS ANY KEY FOR [SHFT M]
     AIN [SHFT M]ENU."'EHVM
1050 GET GE$:IF GE$=""THEN 1050'ELDC
1060 GOTO 50'BCMY
1070 REM ----CREATE NEW INFO
     FILE----'BAYG
1080 CT=1:PRINT"[CLEAR]"
     :PRINT TAB(9)T1$"[SHFT C]REATE
     [SHFT N]EW [SHFT F]ILE"T2$'ENAM
1090 PRINT TAB(4)"[DOWN,SHFT E]
     NTER NEW FILE NAME:":SO=16
     :GOSUB 2290:NAME$=WD$'FVVP
1100 OPEN 1,8,4,"0:"+NAME$+",S,W"'DLCY
1110 GOSUB 2020'BEFV
1120 CT=1:IF ERR=1 THEN CLOSE 1:ERR=0
     :GOTO 1080'HTUF
1130 PRINT"[CLEAR,SHFT N]
     UMBER OF ENTRIES: [WHITE]";
     ENT'BEUE
1140 PRINT TAB(9)T1$"[SHFT E]NTER
     [SHFT N]EW [SHFT D]ATA"T2$'CIMG
1150 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT B2,SHFT S] NAME";'CDQG
1160 IF CA=0 THEN PRINT" (OR [WHITE,
     RVS,SHFT R,SHFT E,SHFT T,SHFT U,
     SHFT R,SHFT N,RVOFF,GREEN])
     :"'EDEK
1170 IF CHA OR CA THEN PRINT":"'EFGF
```

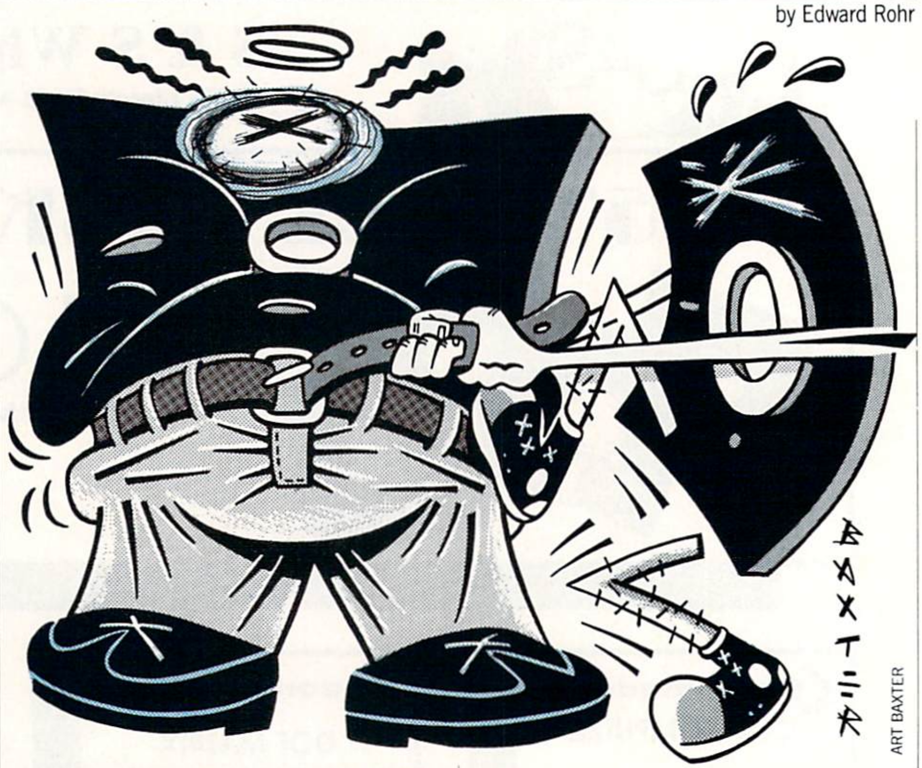
```
1180 SO=28:GOSUB 2290:FILE$(CT,
     Ø)=WD$'DYHJ
1190 IF ALL THEN CA=Ø:GOTO 1230'ELYH
1200 IF CA THEN 750'CFGW
1210 IF FILE$(CT,Ø)=" " AND APP=1
     THEN APP=Ø:CT=CT-9:X=X-9
     :GOTO 780'LILL
1220 IF FILE$(CT,Ø)=" "THEN CLOSE 1
     :CLOSE 15:GOTO 1480'GUTF
1230 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT B2,SHFT S] [SHFT N]UMBER:"
     :SO=30:GOSUB 2290:FILE$(CT+1,
     Ø)=WD$'GDYP
1240 IF CA THEN 750'CFGB
1250 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT U]SER [SHFT N]AME:":SO=27
     :GOSUB 2290:FILE$(CT+2,
     Ø)=WD$'GDQQ
1260 IF CA THEN 750'CFGD
1270 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT P]ASSWORD:":SO=28
     :GOSUB 2290:FILE$(CT+3,
     Ø)=WD$'GDIR
1275 IF CA THEN 750'CFGJ
1280 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT U]SER [SHFT I,SHFT D]:"
     :SO=29:GOSUB 2290:FILE$(CT+4,
     Ø)=WD$'GDYT
1285 IF CA THEN 750'CFGK
1290 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT B2,SHFT S] [SHFT S]YSOP
     [SHFT N]AME:":SO=26:GOSUB 2290
     :FILE$(CT+5,Ø)=WD$'GDGX
1300 IF CA THEN 750'CFGX
1310 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT B2,SHFT S] [SHFT H]OURS:"
     :SO=31:GOSUB 2290:FILE$(CT+6,
     Ø)=WD$'GDXO
1315 IF CA THEN 750'CFGE
1320 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT B2,SHFT S] [SHFT B]AUD:"
     :SO=31:GOSUB 2290:FILE$(CT+7,
     Ø)=WD$'GDMO
1325 IF CA THEN 750'CFGF
1330 PRINT TAB(4)"[DOWN,SHFT E]NTER
     [SHFT B2,SHFT S] [SHFT D]ISTANCE
     :":SO=29:GOSUB 2290
     :FILE$(CT+8,Ø)=WD$'GDVQ
1340 IF CA THEN 750'CFGC
1350 IF ALL THEN ALL=Ø:GOTO 750'ELLG
1360 PRINT "[DOWN,SHFT I]
     S EVERYTHING [SHFT O,SHFT K]?
     [WHITE][[SHFT Y]/[SHFT N]][GREEN]
     "'BAAL
1370 GET GE$'BDFE
1380 IF GE$="Y"THEN 1420'DHFH
1390 IF GE$="N"THEN CHA=1
     :GOTO 470'FLOK
1400 IF GE$="[F8]"THEN CLOSE 1
     :GOTO 50'FHAC
1410 GOTO 1370'BEIY
1420 IF APP=1 THEN APP=Ø:ENT=ENT+1
     :CHA=Ø:GOTO 780'IABK
1430 PRINT#1,FILE$(CT,Ø)+CHR$(13)
     +FILE$(CT+1,Ø)+CHR$(13)+FILE$
     (CT+2,Ø)'JUCP
1440 PRINT#1,FILE$(CT+3,
     Ø)+CHR$(13)+FILE$(CT+4,
     Ø)+CHR$(13)+FILE$(CT+5,Ø)'KVXR
1450 PRINT#1,FILE$(CT+6,
     Ø)+CHR$(13)+FILE$(CT+7,
     Ø)+CHR$(13)+FILE$(CT+8,Ø)'KVHS
1460 ENT=ENT+1:GOTO 1130'DMBH
1470 REM----PRINT FILE MENU----'BVQJ
1480 PRINT"[CLEAR]":PRINT TAB(9)T1$"
     [SHFT P]RINT [SHFT F]ILE [SHFT M]
     ENU"T2$'DJHP
1490 PRINT TAB(4)"[DOWN]1 - [SHFT P]
     RINT [SHFT F]ILE"'CCGM
1500 PRINT TAB(4)"2 - [SHFT M]AIN
     [SHFT M]ENU"'CCMD
1510 PRINT TAB(8)"[DOWN,SHFT C]
     HOICE?"'CCFD
1520 GET GE$'BDFB
1530 IF GE$="1" THEN PRT=1
     :GOTO 1580'FMWH
1540 IF GE$="2" THEN 50'DFSF
1550 GOSUB 1960'BERE
1560 GOTO 1520'BEFF
1570 REM----PRINT FILE----'BRNJ
1580 PRINT"[CLEAR]":PRINT TAB(11)T1$"
     [SHFT P]RINT [SHFT F]ILE"T2$'DKLO
1590 IF PRT THEN N1$=NAME$
     :GOTO 1610'EQBN
1600 PRINT TAB(4)"[DOWN,SHFT E]
     NTER FILE NAME:":SO=16:GOSUB 2290
     :N1$=WD$'FTVL
1610 OPEN 1,8,4,"Ø:"+N1$+",S,R"'DJKF
1620 GOSUB 2020'BEFC
1630 IF ERR THEN ERR=Ø:CLOSE 1
     :GOTO 1580'FOEI
1640 PRINT TAB(4)"[DOWN,SHFT E]
     NTER HEADER:":SO=30:GOSUB 2290
     :HEAD$=WD$'FVDP
1650 PRINT TAB(4)"[DOWN,SHFT A]
     RE YOU USING FANFOLD OR SINGLE
     [WHITE](F/S)[GREEN]"'CCUP
1660 GET GE$:IF GE$="[F8]"THEN CLOSE 1
     :GOTO 50'GLOL
1670 IF GE$="F"THEN FAN=Ø
     :GOTO 1700'FMDM
1680 IF GE$="S"THEN FAN=1
     :GOTO 1700'FMRN
1690 GOTO 1660'BEKJ
1700 PRINT TAB(4)"[DOWN,SHFT L]
     INE UP PAPER AND PRESS ANY KEY."
     :PAGE=1'DIAM
1710 GET GE$:IF GE$=""THEN 1710'ELGF
1740 OPEN 4,4,7'BFYF
1750 PRINT#4," [SHFT B2,SHFT S]
     [SHFT L]ISTER : "HEAD$'BHFM
1760 PRINT#4," [SHFT P]AGE
     : ";PAGE'BHHK
1780 GOSUB 2180'BEMJ
1810 COUNT=1'BGHE
```

```
1820 INPUT#1,A$,B$,C$,D$,E$,F$,G$,H$,
     I$'BDQI
1830 IF ST AND 64 THEN CL=1'EHYI
1840 PRINT#4,"[SHFT -,SHFT B2,SHFT S]
     [SHFT N]AME: ";A$;
     SPC(28-LEN(A$));"[SHFT -]"'EOKQ
1850 PRINT#4,"[SHFT -,SHFT N]UMBER
     : ";B$;SPC(30-LEN(B$));"[SHFT -]
     "'EODP
1860 PRINT#4,"[SHFT -,SHFT U]SER
     [SHFT N]AME: ";C$;
     SPC(27-LEN(C$));"[SHFT -]"'EONS
1870 PRINT#4,"[SHFT -,SHFT P]ASSWORD
     : ";D$;SPC(28-LEN(D$));"[SHFT -]
     "'EOFS
1882 PRINT#4,"[SHFT -,SHFT S]YSOP
     [SHFT N]AME: ";F$;
     SPC(26-LEN(F$));"[SHFT -]"'EONW
1884 PRINT#4,"[SHFT -,SHFT H]OURS
     : ";G$;SPC(31-LEN(G$));"[SHFT -]
     "'EOHW
1886 PRINT#4,"[SHFT -,SHFT B]AUD
     : ";H$;SPC(32-LEN(H$));"[SHFT -]
     "'EORY
1888 PRINT#4,"[SHFT -,SHFT D]ISTANCE
     : ";I$;SPC(28-LEN(I$));"[SHFT -]
     "'EOAC
1889 IF CL=1 THEN GOSUB 2200:CLOSE 4
     :CLOSE 1:GOTO 50'HODA
1890 GOSUB 2200'BEFL
1910 IF COUNT<>5 THEN PRINT#4
     :GOSUB 2180'GMCJ
1920 COUNT=COUNT+1:IF COUNT=6 THEN
     GOTO 2230'GWDN
1930 GET GE$:IF GE$="[F8]"THEN CLOSE 1
     :CLOSE 4:GOTO 50'HNDM
1940 GOTO 1820'BEIH
1950 REM ----GET CURSER
     SUBROUTINE----'BCLO
1960 FOR FR=1 TO 200:NEXT FR'EJIM
1970 PRINT TAB(16)"[WHITE,UP,RVS]
     [RVOFF]"'CDOM
1980 FOR FR=1 TO 200:NEXT FR'EJIO
1990 PRINT TAB(16)"[UP] [GREEN]"'CDFN
2000 RETURN'BAQT
2010 REM ----DISK ERROR
     SUBROUTINE----'BCMC
2020 OPEN 15,8,15'BHAW
2030 INPUT#15,E1,E1$,E2$,E3$'BRYA
2040 IF E1=0 OR E1=1 THEN RETURN'GGHD
2050 PRINT "[DOWN,L. RED,SHFT E,
     SHFT R2,SHFT O,SHFT R]!!"
     :CLOSE 15'CDJF
2060 PRINT TAB(4)E1"[SPACE2]"E1$"
     [SPACE2]"E2$"[SPACE2]"E3$'CNJE
2070 IF E1=63 THEN 2120'DIKE
2080 PRINT TAB(4)"[GREEN,DOWN,SHFT P]
     RESS ANY KEY."'CCGI
2090 GET GE$:IF GE$="[F8]"THEN CLOSE 1
     :GOTO 50'GLOJ
2100 IF GE$=""THEN 2090'DHTX
2110 ERR=1:RETURN'CFWX
2120 PRINT TAB(4)"[DOWN,GREEN,SHFT R]
     EPLACE? [WHITE](Y/N)[GREEN]"'CCYC
2130 GET GE$:IF GE$="Y"THEN CLOSE 1
     :OPEN 1,8,4,"@ 0:"+NAME$+",S,W"
     :GOTO 2020'JAEL
2140 IF GE$="N" THEN ERR=1:RETURN'FISE
2150 IF GE$="[F8]"THEN CLOSE 1
     :GOTO 50'FHAF
2160 GOTO 2130'BEDC
2170 REM ----PRINT DIVIDER
     SUBROUTINES----'BGMK
2180 PRINT#4,"[CMDR A]---------------
     ----------------------[CMDR S]"
     :RETURN'CDSM
2200 PRINT#4,"[CMDR Z]---------------
     ----------------------[CMDR X]"
     :RETURN'CDAG
2220 REM ----PAPER ADVANCE
     SUBROUTINE----'BFMG
2230 IF FAN=0 THEN FOR FR=1 TO 10
     :PRINT#4:NEXT:GOTO 2270'JRHI
2240 PRINT TAB(4)"[DOWN,SHFT P]
     LEASE INSERT A NEW SHEET OF
     PAPER AND PRESS ANY KEY."'CCBQ
2250 GET GE$:IF GE$="[F8]"THEN 50'EJRG
2260 IF GE$=""THEN 2250'DHRF
2270 PAGE=PAGE+1:GOTO 1750'DOLI
2280 REM ----INPUT SEQUENCE----'BVXJ
2290 PRINT TAB(8)"[YELLOW,DOWN2]";
     :FOR FR=1 TO SO:PRINT"[CMDR Y]";
     :NEXT:PRINT:PRINT TAB(8)"[UP2]";
     'KRJR
2300 PRINT "[WHITE,RVS] [RVOFF,LEFT]";
     'BBJY
2310 GET GE$'BDFY
2320 IF GE$=CHR$(13) THEN PRINT"
     [GREEN]":WD$=W1$:W1$=""
     :GOTO 2440'IXXJ
2330 IF GE$=CHR$(34) THEN
     GE$=CHR$(39)'GOXG
2340 IF GE$=CHR$(20) AND POS(0)<>8
     THEN GOTO 2430'JPDJ
2350 IF GE$=CHR$(20) THEN GOTO
     2310'FLRH
2360 IF GE$<>""THEN IF ASC(GE$)<32 OR
     ASC(GE$)>140 AND ASC(GE$)<161
     THEN GOTO 2310'PFKT
2370 IF GE$=CHR$(129) THEN 2310'EMOJ
2380 IF GE$="[F8]" THEN CLOSE 1
     :CLOSE 4:GOTO 50'GJOL
2390 IF POS(0)=7 THEN PRINT" [RVS]
     [RVOFF,LEFT]";'FFVL
2400 IF GE$=""THEN 2310'DHOB
2410 IF POS(0)=SO+8 THEN 2310'FKDE
2420 PRINT GE$"[RVS] [RVOFF,LEFT]";
     :W1$=W1$+GE$:GOTO 2310'ETOI
2430 PRINT GE$;"[RVS] [RVOFF,LEFT]";
     :W1$=LEFT$(W1$,(LEN(W1$)-1))
     :GOTO 2310'GDHM
2440 IF WD$=""THEN WD$=" ":RETURN'FHBG
2450 RETURN'BAQD
```

END

by Edward Rohr

Smush
for the Commodore 64



ART BAXTER

Everyone can use a little extra disk space. Sometimes it seems that all you ever do with your computer is format disks. There are a few solutions to this. You can buy a disk drive with a larger capacity such as the Commodore 1571 or 1581, buy a hard drive (10 or 20 MB would be nice), or take the cheap way out: compress files.

What? The only file compressor you have is one that you got out of another magazine? You say it works great on hi-res pictures but is horrible when it comes to text files or programs? I know exactly what the problem is.

That type of compressor only works well when it deals with data that is very repetitive. It's common to find a string of 100 zeros in a hi-res image. But how many times do you see a string of 100 Es in a program's documentation? Do you ever see a BASIC program line made up of 15 POKEs? How about a machine language program with 200 NOPs in a row? Of course not! That's why they don't make a dent in the file's size.

Smush works by a different principle. It'll compress any type of data: hi-res pictures, letters to mom, BASIC or machine language programs, even itself. Of course you don't want your only copy of Smush to be "smushed." If it is, you're out of luck.

Type in Smush. It's written in BASIC with machine language sub-routines contained in DATA statements. The data has a checksum for those people who don't like using the Magazine Entry Program.

After typing in Smush, save a copy. It's a good idea to save another copy on another disk. That way if you lose the first copy you won't be stuck with a bunch of "smushed" files that you can't "un-smush."

After running Smush, you will see a simple menu. The three commands are:

S — Smushes a File
U — Un-smushes a File
X — Exit Program

Smushing a file is fairly simple. You just hit "S" at the menu and give the name of the file you want to smush. You can use wildcards (*,?) when you enter the name. Smush will read through the directory and get the proper name.

Smush will then read through the file and get some statistics. It will then calculate the number of blocks the smushed file will be. If the smushed file will be bigger or the same size as the original, it will say so and take you back to the menu. If it can compress the file, it will do several things.

First, it will write the compressed file to the disk with the extension .SMU. If the original filename was larger than 12 characters, it will use the first twelve characters. For example, the file "fifteen letters" will be "fifteen lett.smu" after it's smushed.

After compressing the file, it will analyze the compressed file. If it can compress it, it will do so. This is called double smush and the file will have the extension .DSM.

There are more levels of compression: triple (.TSM), quadruple (.QSM), quintuple (.FSM), and hextuple (.HSM). Most files won't be able to be compressed past .QSM.

It all sounds complicated and it is. But all you have to do is type in the name of the file.

After it compresses the file as much as possible, it will return you to the menu. The smushed file will be from 15 to 70 percent smaller depending on the type of data being compressed. The average is about 25 to 30 percent.

Un-Smushing

Un-smushing a file is simple too. Well, for you anyway. You just hit "U" and give it the name of the file. You can use wildcards (*,?) when you do. It will read the directory entry and get the proper name.

The program will take the smushed file and un-smush it the number of levels that it was compressed. Smush will write the un-smushed file using the name of the smushed file except without the extension. If the original name was longer than 12 characters, make sure you rename it after un-smushing.

How it Works

Now for the technical aspects of the program. The explanation is 25 pages long, and I'm getting paid a huge amount of money. Just kidding.

Smush works like this. (This explanation is non-technical and very short. You might like to read it even if you're not a programmer.) First, it reads the file and counts how many times each character is used. There are 256 possible characters, and each one takes up eight bits.

Smush then sorts the characters putting those that appear most often at the top of the list. It then assigns shorter bit codes to the top 32 characters.

When the file is written back to disk, the short codes are substituted for the long, eight-bit codes and a smaller file is the result.

When un-smushing it simply reverses the process: substituting the eight-bit codes for the short codes.

In conclusion, I'd like to say that Smush is the best choice of the three options to cut down on disk formatting. It's easy to use, it lets you store more data per disk, and most important: it's free.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Smush

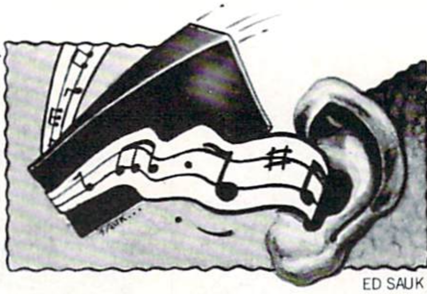
```
100 AD=49664:RESTORE:CK=.
    :PRINT"[CLEAR,DOWN2]
    POKING MACHINE CODE...PLEASE
    WAIT"'ENKK
105 READ A:IF A>255 THEN IF A<>CK
    THEN PRINT"[DOWN2]DATA ERROR
    [DOWN2]":END'KKNL
107 IF A>255 THEN 1000'DIDF
110 POKE AD,A:CK=CK+A:AD=AD+1
    :GOTO 105'GUPE
500 DATA 160,224,192,128,176,240,144,
    208'BGGF
505 DATA 184,248,152,136,216,200,188,
    252'BGLK
510 DATA 156,140,220,204,190,254,191,
    255'BGAG
515 DATA 158,159,142,143,222,223,206,
    207'BGDL
520 DATA 240,240,248,248,248,248,248,
    248'BGAH
525 DATA 252,252,252,252,252,252,254,
    254'BGFM
530 DATA 254,254,254,254,255,255,255,
    255'BGVI
535 DATA 255,255,255,255,255,255,255,
    255'BGAN
540 DATA 4,4,5,5,5,5,5,5'BPRG
545 DATA 6,6,6,6,6,6,7,7'BPEL
550 DATA 7,7,7,7,8,8,8,8'BPOH
555 DATA 8,8,8,8,8,8,8,8'BPSM
560 DATA 6,174,5,174,133,174,198,
    175'BCDK
565 DATA 240,1,96,169,8,133,175,
    162'BBUP
570 DATA 3,32,201,255,165,174,76,
    210'BCGL
575 DATA 255,162,0,134,254,189,0,
    207'BCKQ
580 DATA 160,0,217,0,206,240,31,
    200'BBHM
585 DATA 192,32,208,246,169,0,32,
    96'BBUR
590 DATA 194,169,8,133,251,166,254,
    30'BDVN
595 DATA 0,207,169,0,42,32,96,194'BYOS
600 DATA 198,251,208,241,240,13,185,
    0'BDIF
605 DATA 194,166,254,157,0,207,185,
    64'BDAK
610 DATA 194,208,224,230,254,166,254,
    228'BGNH
615 DATA 253,208,194,96,162,2,32,
    198'BCBL
620 DATA 255,160,0,132,253,32,228,
    255'BDFH
625 DATA 164,253,153,0,207,230,253,
    32'BDAM
630 DATA 183,255,41,64,133,252,208,
    6'BCOI
635 DATA 165,253,201,254,208,231,76,
    204'BFCO
640 DATA 255,234,32,121,194,76,204,
    255'BEIK
645 DATA 162,0,138,157,0,206,169,
    0'BAFO
650 DATA 157,0,203,157,0,204,157,
    0'BAWK
655 DATA 205,232,208,238,169,0,133,
    251'BEBQ
660 DATA 133,252,133,253,162,2,32,
    198'BDIL
665 DATA 255,32,228,255,72,32,183,
    255'BDUQ
670 DATA 168,104,170,254,0,203,208,
    3'BCAM
675 DATA 254,0,204,208,3,254,0,
    205'BAUR
680 DATA 230,251,208,2,230,252,208,
    2'BCTN
685 DATA 230,253,152,41,192,240,218,
    76'BEDT
690 DATA 204,255,160,0,152,170,185,
    0'BCXO
695 DATA 205,221,0,205,144,26,240,
    3'BBPT
700 DATA 24,144,77,185,0,204,221,
    0'BABG
705 DATA 204,144,13,240,3,24,144,
    64'BBXL
710 DATA 185,0,203,221,0,203,176,
    56'BBYH
715 DATA 189,0,205,72,185,0,205,
    157'BBNM
720 DATA 0,205,104,153,0,205,189,
    0'BASI
725 DATA 204,72,185,0,204,157,0,
    204'BBYN
730 DATA 104,153,0,204,189,0,203,
    72'BBWJ
735 DATA 185,0,203,157,0,203,104,
    153'BCTO
740 DATA 0,203,189,0,206,72,185,0'BYDK
745 DATA 206,157,0,206,104,153,0,
    206'BCTP
750 DATA 232,208,163,200,192,255,208,
    156'BGEM
755 DATA 24,96,165,251,240,8,198,
    251'BCYQ
760 DATA 6,254,169,0,42,96,162,2'BXWL
765 DATA 32,198,255,169,8,133,251,
    32'BCWR
770 DATA 228,255,133,254,32,183,255,
    41'BEJO
775 DATA 64,133,252,24,144,220,234,
    234'BEWT
780 DATA 32,154,195,208,36,169,0,
    133'BCPO
785 DATA 253,160,8,132,255,32,154,
    195'BDOT
790 DATA 74,38,253,164,255,136,208,
    243'BERQ
795 DATA 162,3,32,201,255,165,253,
```

```
      32'BCCU
  800 DATA 210,255,165,252,240,218,76,
      204'BFDI
  805 DATA 255,133,253,162,1,134,255,
      32'BDFM
  810 DATA 154,195,74,38,253,166,255,
      232'BEWJ
  815 DATA 138,160,0,217,64,194,208,
      29'BCRN
  820 DATA 165,253,32,36,196,217,0,
      194'BCTJ
  825 DATA 208,18,132,255,162,3,32,
      201'BCAO
  830 DATA 255,164,255,185,0,206,32,
      210'BDGK
  835 DATA 255,24,144,198,138,200,192,
      32'BEJQ
  840 DATA 208,217,240,201,152,72,138,
      168'BFEM
  845 DATA 165,253,192,8,240,4,10,
      200'BBAQ
  850 DATA 208,248,141,56,196,104,168,
      169'BFYN
  855 DATA 160,57,32,194,96,255,0,0'BYOR
  860 DATA 162,0,142,61,196,142,62,
      196'BCNN
  865 DATA 142,63,196,189,64,194,168,
      173'BEIT
  870 DATA 61,196,24,125,0,203,141,
      61'BBAO
  875 DATA 196,173,62,196,125,0,204,
      141'BDMT
  880 DATA 62,196,173,63,196,125,0,
      205'BCSP
  885 DATA 141,63,196,136,208,225,232,
      224'BFGV
  890 DATA 32,208,216,160,9,173,61,
      196'BCRQ
  895 DATA 24,125,0,203,141,61,196,
      173'BCCV
  900 DATA 62,196,125,0,204,141,62,
      196'BCLI
  905 DATA 173,63,196,125,0,205,141,
      63'BCJN
  910 DATA 196,136,208,225,232,208,220,
      173'BGGK
  915 DATA 61,196,168,41,248,141,61,
      196'BDCO
  920 DATA 152,41,7,240,19,173,61,
      196'BBPK
  925 DATA 24,105,8,141,61,196,144,
      8'BANP
  930 DATA 238,62,196,144,3,238,63,
      196'BCFL
  935 DATA 160,3,78,63,196,110,62,
      196'BBVQ
  940 DATA 110,61,196,136,208,244,24,
      96'BDRM
  945 DATA 101251'BGWN
 1000 CLR:PRINT"[CLEAR,DOWN2]
      SMUSH BY EDWARD ROHR"
      :PRINT"----- -- ------ ----"'DCSE
 1002 PRINT"[DOWN][S]->SMUSH FILE"'BADY
 1005 PRINT"[U]->UN-SMUSH FILE"
      :PRINT"[X]->EXIT SMUSH[DOWN]
      "'CBZJ
 1010 A$="":INPUT"COMMAND";A$'CGXX
 1015 IF A$="S"THEN 3000'DGUC
 1020 IF A$="U"THEN 5000'DGYX
 1030 IF A$="X"THEN PRINT"[DOWN]BYE,
       BYE!":FOR R=1 TO 2500:NEXT
      :PRINT"[CLEAR]":END'KMIH
 1040 GOTO 1000'BEXX
 2000 PRINT"[DOWN3]ABORTED!"
      :FOR R=1 TO 2500:NEXT
      :GOTO 1000'GNSC
 3000 EX$(1)=".SMU":EX$(2)=".DSM"
      :EX$(3)=".TSM":EX$(4)=".QSM"
      :EX$(5)=".FSM"'FJNL
 3005 EX$(6)=".HSM"'BGUD
 3010 INPUT"[DOWN]FILENAME";SF$
      :GOSUB 5100:IF SF$=""THEN
      2000'FRBF
 3011 PRINT"[DOWN]SMUSH: "SF$
      :INPUT"[DOWN]CORRECT";A$
      :IF A$<>"Y"THEN 2000'GOXI
 3014 OF$=LEFT$(SF$,12)'CLHD
 3015 N$=CHR$(0):CL%=.'DKHF
 3020 PRINT"[DOWN]ANALYZING FILE[DOWN]"
      :CLOSE 2:OPEN 2,8,2,SF$:SYS 49896
      :CLOSE 2'FUKI
 3025 N=PEEK(251)+PEEK(252)*256+PEEK
      (253)*65536'IYKM
 3030 SYS 49970'BFUY
 3035 SYS 50240:NN=36+PEEK(50240-3)
      +PEEK(50240-2)*256+PEEK(50240-1)
      *65536'NRUU
 3040 IF INT(N/254)>INT(NN/254)THEN
      3065'HREH
 3045 PRINT"[DOWN]NO FURTHER
      COMPRESSION."'BAJL
 3050 CLOSE 15:OPEN 15,8,15
      :FOR R=1 TO 6:IF R=CL%THEN
      3060'IXQJ
 3055 PRINT#15,"S0:"+OF$+EX$(R)'DMPK
 3060 NEXT:CLOSE 15:GOTO 1000'DITE
 3065 CL%=CL%+1:IF CL%=7 THEN CL%=CL%-1
      :GOTO 3045'IYFQ
 3070 PRINT"[DOWN]COMPRESSING[DOWN2]
      "'BAHG
 3075 CLOSE 2:CLOSE 3:OPEN 2,8,2,SF$
      :OPEN 3,8,3,OF$+EX$(CL%)+",P,W"
      :NN=.:O$=""'INWV
 3080 HH%=N/65536:HL%=(N-HH%*65536)/256
      :LL%=N-HH%*65536-HL%*256'LVXU
 3085 PRINT#3,CHR$(LL%)+CHR$(HL%)+CHR$
      (HH%);CHR$(CL%);'HYAS
 3090 FOR R=.TO 31:PRINT#3,
      CHR$(PEEK(52736+R));:NEXT:B=.
      :POKE 175,8'KDMQ
 3095 PRINT"[UP,SPACE12,LEFT12]BLOCK
      :"B+1:SYS 49852:B=B+1'FMKB
```

```
3100 SYS 49890:IF PEEK(252)=.THEN
     3095'FQQC
3105 BC=PEEK(175):IF BC=8 THEN
     3125'FPPH
3110 PRINT"[DOWN]FLUSHING BIT BUFFER
     [DOWN]":BY=PEEK(174)'DIIG
3115 IF BC=.THEN PRINT#3,CHR$(BY);
     :GOTO 3125'GPKJ
3120 BY=(BY*2)AND 255:BC=BC-1
     :GOTO 3115'GVRG
3125 IF CL%>1 THEN CLOSE 15
     :OPEN 15,8,15,"S0:"+OF$+EX$
     (CL%-1):CLOSE 15'JFVP
3130 PRINT"COMPRESSED TO LEVEL"CL%
     :CLOSE 2:CLOSE 3:SF$=OF$+EX$(CL%)
     :GOTO 3020'GCHO
5000 EX$(1)=".SMU":EX$(2)=".DSM"
     :EX$(3)=".TSM":EX$(4)=".QSM"
     :EX$(5)=".FSM"'FJNN
5005 EX$(6)=".HSM"'BGUF
5010 INPUT"[DOWN]FILENAME";SF$
     :N$=CHR$(0):GOSUB 5100
     :IF SF$=""THEN 2000'HXQJ
5012 PRINT"[DOWN]UN-SMUSH: "SF$
     :INPUT"[DOWN]CORRECT";A$
     :IF A$<>"Y"THEN 2000'GOEM
5015 CLOSE 2:OPEN 2,8,2,SF$
     :GET#2,A$,A$,A$,A$:CLOSE 2
     :CL%=ASC(A$+N$)'HNNP
5020 FOR F=CL%TO 1 STEP-1
     :SF$=LEFT$(SF$,LEN(SF$)-4)+EX$(F)
     'KDCL
5022 PRINT"[DOWN]DECOMPRESSING
     LEVEL"F"[DOWN]"'BBAH
5025 OF$=LEFT$(SF$,LEN(SF$)-4)
     :IF F>1 THEN OF$=OF$+EX$(F-1)
     'KGDR
5030 CLOSE 2:OPEN 2,8,2,SF$
     :GET#2,A$,B$,C$:OPEN 3,8,3,OF$+",
     P,W"'FIGK
5035 N=ASC(A$+N$)+ASC(B$+N$)*256+ASC
     (C$+N$)*65536:GET#2,O$:O$=""'NLYV
5040 FOR R=.TO 31:GET#2,A$
     :POKE 52736+R,ASC(A$+CHR$(0))
     :NEXT'KBPM
5045 POKE 251,.:SYS 50112:CLOSE 2
     :CLOSE 3'EPOL
5050 IF F<>CL%THEN CLOSE 15
     :OPEN 15,8,15,"S0:"+SF$
     :CLOSE 15'IVSM
5055 NEXT:GOTO 1000'CFGJ
5100 CLOSE 2:OPEN 2,8,.,"$:"+SF$
     :FOR R=1 TO 8:GET#2,A$:NEXT'IWOH
5105 GET#2,A$:IF A$<>""THEN 5105'FMJI
5110 GET#2,A$,A$,A$,B$:SF$=""'CSCD
5115 GET#2,A$:IF A$="B"THEN CLOSE 2
     :RETURN'GKFJ
5120 IF A$<>CHR$(34)THEN 5115'FKTF
5125 GET#2,A$:IF A$=CHR$(34)THEN
     CLOSE 2:RETURN'HOJM
5130 SF$=SF$+A$:GOTO 5125'DNCF
```

END

by Richard Curcio



ED SAUK

Modulation Wedge

for the Commodore 64 or 128

The BASIC 7.0 and SOUND commands greatly simplify the generation of music and sound effects on the Commodore 128. The Super Expander cartridge does the same for the Commodore 64 by adding commands to BASIC 2.0. Both languages, however, fail to utilize some of the versatility of the SID chip. An interrupt-driven routine can add pulse width modulation and filter cut-off frequency to SID's repertoire.

Interrupts

Sixty times a second, the 64 or 128 stops whatever it's doing and does its "housekeeping." Some of these chores are scanning the keyboard, blinking the cursor, and updating the "jiffie" clock. On the 128 or a 64 fitted with a Super Expander these interrupt tasks can include sprite movement or playing music. By changing the IRQ vector to point to a machine language program, another task can be "wedged" into the interrupt process.

Listing 1 is the BASIC loader for Mod Wdg. As written, it pokes the machine language into location 3072 on a 128. It can be located elsewhere by changing the variable MW in line 130. The new location should be on a page boundary, an address evenly divisible by 256. On a 64 the Super Expander uses memory from 49152 to 52223. If you want to use the DOS wedge that lives at 52224, Mod Wdg will have to go somewhere else. Location 32512, one page below the top of BASIC program space (lowered by Super Expander) is a good choice. Before running the loader, enter POKE55, 0:POKE56, 127: CLR RETURN. On the 64 the BANK 15 statement (Line 140) should be removed. The loader will make the necessary adjustments to relocate the ML and report the range of memory it occupies. Enable the wedge with SYS MW where MW is the beginning address. The modulation wedge can co-exist with another IRQ altering program if it is enabled *after* the other program is enabled. On the 128, Mod Wdg will be disabled by the RUN/STOP-RESTORE keys. On the 64 with Super Expander, the wedge can only be disabled by a reset.

If you don't have a Super Expander, Mod Wdg will work with most other sound generating programs, whether IRQ driven ML or BASIC pokes.

Preparation

Six locations within Mod Wdg are used to control which of SID's features are modulated and by how much. Six bits of location MW + 4 turn the effects on and off.

Bit 0—Turns on Pulse Width Modulation (PWM), for SID voice 1. POKE a 1 here for on, 0 for off.

Bit 1—POKE MW + 4, 2 to turn on PWM for voice 2.

Bit 2—POKE MW + 4, 4 to turn on PWM for voice 3.

Following binary rules, to turn on PWM for voices 1 and 3, POKE MW + 4, 1 OR 4. A SID voice must be on and set for pulse for the effect to be heard.

Normally, the pulse sound produced using BASIC 7.0 or the Super Expander is static, fixed at whatever duty cycle set by the ENVELOPE or TUNE statement. By varying the pulse width while a note is playing, the sound becomes richer, more animated as the harmonic content changes. Mod Wdg uses the fastest byte of the jiffie clock, which takes 4.27 seconds to count from zero to 255 to generate an 8.54 second triangular waveform for pulse width or filter modulation.

Bits 3, 4 and 7 of location MW + 4 control the modulation of SID's filter cut-off frequency (FCM) by an amount dependent upon the value in location MW + 5.

Bit 3—Turns FCM on when 1, off when 0.

Bit 4—Determines the source of FC modulation. If 0, the slow triangle is used. If set to 1, the output of SID oscillator 3 is used. This feature requires some set-up to be used effectively. See the discussion of the demo programs.

Bits 5 and 6 are unused.

Bit 7—If set to 1, bit 4 is ignored and the output from SID envelope generator 3 is used to modulate the filter. to set this bit without altering the other bits, POKE MW + 4, PEEK (MW + 4) OR 128.

Location MW + 5 controls the FCM amount and direction.

Bits 0, 1 and 2 determine how many times the modulation signal is divided by 2. Poking zeros here, the full 8 bits of the modulating signal is used to vary the filter cut-off frequency register high byte. The filter low byte, consisting of only three bits, is not affected. So, if n equals the value of bits 0–2, the modulating signal is divided by 2^n.

Bits 3-6 are unused.

Bit 7—If set to 1, the modulation is invented before division, if any takes place. Thus, if a low frequency sawtooth waveform from oscillator 3 is used for modulation, the filter can be made to slowly sweep upward and quickly go low, or sweep downward and quickly go high. To clear this bit without changing the amount, POKE MW + 5, PEEK (MW + 5) AND 127.

Locations MW + 6 through MW + 8 set the initial pulse widths for SID voices 1-3. Only the lowest three bits of each location are used. This value is separate from the value set by the ENVELOPE or SOUND statement. For PWM, the eight-second triangle is shifted into a value that varies from zero to 2040 in steps of eight. By itself, this would vary the pulse width from 0% to 49.8%, briefly producing silence at the low end. The values in MW + 6 through MW + 8 are multiplied by 256 and added to the shifted eight-second triangle plus 255 before being sent to SID's PWL and PWH registers. So even though all three voices' pulse widths may be modulated by the same waveform, setting different starting pulse widths provides some variety. By setting any of these locations to 7, the corresponding pulse width is briefly silent at the high end of the slow triangle. If these locations are not changed, they retain the values 6, 4 and 2 for voices 1, 2 and 3, respectively.

Location MW + 9 sets an initial filter cut-off frequency. The value produced by the division and/or inversion set by location MW + 5 results in no division, MW + 9 is ignored.

While this may seem like a lot of set-up, once initial PW and FC values are set, only one or two pokes are needed to turn on or off the modulation or select a different source of filter modulation.

The Demos

Listing 2 is a BASIC program that demonstrates usage of Mod Wdg with the BASIC 7.0 SOUND command. It assumes Mod Wdg has been enabled with the proper SYS. Change the variable MW in line 1010 if Mod Wdg is at a different address.

The first GOSUB to the SOUND statement in line 1310 plays three seconds of a 25% duty cycle pulse waveform. Since SOUND is an interrupt-driven command, once started BASIC immediately moves to the next statement. The SLEEP command is necessary to produce a delay. Since the duration in SOUND is expressed in jiffies—sixtieths of a second—and SLEEP is expressed in seconds, duration D is divided by 60 and 2 is added. In line 1050, location MW+4 is POKEd to turn on PWM for voice 1 and again a pulse is sounded. This sound is most effective with low pitched sounds.

Line 1080 sets up the filter and the PLAY statement in line 1090 enables it for voice 1. If you've been wondering how to use the filter with SOUND, this is how. The Vn parameter in the PLAY string must match the voice number in the SOUND statement. In line 1100, PWM is turned off, and FCM by eight-second triangle is turned on. With slow FCM this effect is somewhat unpredictable in that you don't know where you'll "catch" the slow triangle.

In lines 1140-1150, SID oscillator 3 is POKEd to produce a faster sawtooth waveform which is used to first sweep the filter upward, then inverted to sweep downward. The pokes in line 1230 slow down oscillator 3 and change the waveform to noise or random steps. When applied to the filter, this produces a different sort of "computer" sound.

If you want to "tinker" with this program, place REMs in front of the PRINT statements and LIST the lines you want to change.

Listing 3 is a demo for use with the 128 PLAY command. It can be used with the 64/Super Expander if the following changes are made:

Change the value of MW in line 1010 to the location of Mod Wdg (32512).

Remove the BANK 15 statement.

Substitute TUNE for ENVELOPE.

Replace PLAY with PRINT CHR$(6);.

Decrement all "Vn" occurrences since BASIC 7.0 numbers voices 1-3 and the Super Expander uses 0-2.

Line 1030 of listing 3 establishes the string of notes that will be PLAYed, first with a fixed pulse width, then with PWM. With a fast Attack, clicks may be heard at the start of each note. This is because when PLAY starts a note, it uses the pulse width in the specified ENVELOPE. The next interrupt, 16 milliseconds later, Mod Wdg stores a new value in the PW registers. The clicks can be minimized by setting an Attack value longer than 16 milliseconds.

In line 1060 the filter is set up for bandpass filtering. SID voice 3 is POKEd in line 1070 to generate a low frequency triangle, producing the classic Wah-Wah sound when applied to the filter.

Line 1100 alters the Attack, Decay and Sustain of ENVELOPE 6. Line 1120 POKEs Mod Wdg for FCM by voice 3's amplitude envelope and B$ is altered so that voice 3 will be PLAYed with ENVELOPE 6 and filtering. When the note string is PLAYed, voice 3's envelope output sweeps the filter with each note. Use this when voice 3 is filtered.

By changing the pokes to Mod Wdg, it will become apparent that this short routine makes the SID chip even more powerful than it already is. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Listing 1

```
130 MW=3072:REM USE 49152 FOR 64'CUUE
140 BANK 15:REM DELETE FOR C64'CQRE
150 HI=INT(MW/256):LO=MW-HI*256'GTFI
160 CS=0:IF LO>0 THEN PRINT"BAD
    ADDRESS":END'GITJ
170 FOR I=0 TO 203:READ D:CS=CS+D'GNOI
180 IF D=>0 THEN POKE MW+I,D'GHQI
190 IF D=-1 THEN POKE MW+I,HI'GINJ
200 NEXT'BAEV
210 IF CS<>17518 THEN PRINT"ERROR IN
    DATA":END'GILG
220 PRINT"MODULATION WEDGE
    INSTALLED"'BAXF
230 PRINT MW"TO"MW+203:PRINT'DIBD
240 PRINT"TO ENABLE; SYS"MW:END'CDXF
250 DATA 120,184,80,14,0,0,6,4'BVAF
260 DATA 2,0,0,0,0,0,0,2'BPIF
270 DATA 9,16,173,20,3,172,21,3'BWHH
280 DATA 201,51,208,4,192,-1,240,
    16'BBQJ
290 DATA 141,132,-1,140,133,-1,169,
    51'BDIK
300 DATA 141,20,3,169,-1,141,21,3'BYMC
310 DATA 88,96,234,234,165,161,74,
    165'BDDE
320 DATA 162,144,2,73,255,141,11,
    -1'BBSE
330 DATA 72,10,10,10,141,12,-1,
    104'BAVF
340 DATA 74,74,74,74,74,141,13,-1'BYMG
350 DATA 24,173,4,-1,240,45,141,
    14'BARH
360 DATA -1,162,0,224,3,240,30,78'BYRI
370 DATA 14,-1,144,22,188,15,-1,
    173'BBSJ
380 DATA 12,-1,105,255,153,0,212,
    189'BCTK
390 DATA 6,-1,41,7,109,13,-1,153'BXTK
400 DATA 1,212,232,208,222,78,14,
    -1'BBRD
410 DATA 176,4,234,76,255,255,44,
    4'BAXE
420 DATA -1,48,54,78,14,-1,176,5'BXNE
430 DATA 173,11,-1,144,3,173,27,
    212'BBSG
440 DATA 44,5,-1,16,2,73,255,168'BXOG
450 DATA 173,5,-1,41,7,170,208,4'BXFH
460 DATA 152,184,80,13,152,224,0,
    240'BCXJ
470 DATA 4,74,202,16,248,24,109,9'BYOK
480 DATA -1,141,22,212,234,184,80,
    195'BDYL
490 DATA 234,173,28,212,184,80,209,
    234'BEJN
500 DATA 0,0,0,0'BHXA
```

END

Listing 2

```
1010 MW=3072:REM ADJUST IF
     NECESSARY'CYQB
1020 BANK 15:POKE MW+4,0
     :POKE MW+5,0'FPVB
1030 PRINT"[CLEAR,DOWN]
     FIXED 25% PULSE WIDTH[DOWN]"'BAWC
```

```
1040 D=180:GOSUB 1310'CJBA
1050 POKE MW+4,1:REM PWM VOICE1'DPRD
1060 PRINT"PULSE WIDTH MODULATION
     [DOWN]"'BADG
1070 D=600:GOSUB 1310'CJYD
1080 FILTER 1023,1,0,0,14
     :REM LOW-PASS FILTER'CEGJ
1090 PLAY"V1X1"'BBWE
1100 POKE MW+4,8:REM FCM BY SLOW
     TRIANGLE'DXGC
1110 PRINT"FILTER MODULATION BY SLOW
     TRIANGLE[DOWN]"'BANF
1120 GOSUB 1310'BEGW
1130 REM *** SET UP SID VOICE 3
     ***'BUOC
1140 POKE 54286,27:POKE 54287,0
     :REM A LOW FREQUENCY'DFAH
1150 POKE 54290,32:REM WAVE =
     SAWTOOTH'CWVF
1160 POKE MW+4,24:REM FCM BY OSC3
     WAVE'DUWH
1170 PRINT"FCM BY UP SAWTOOTH[DOWN]
     "'BARG
1180 GOSUB 1310'BEGD
1190 POKE MW+5,128:REM INVERTED'DQLJ
1200 POKE MW+9,20'CGVW
1210 PRINT"...AND DOWN SAWTOOTH[DOWN]
     "'BAKC
1220 GOSUB 1310'BEGX
1230 POKE 54286,7:POKE 54290,128
     :REM A SLOW, RANDOM WAVEFORM'DNPJ
1240 FILTER 1023,0,1,0,14
     :REM BAND-PASS FILTER'CFQH
1250 D=1000:POKE MW+5,2
     :POKE MW+9,30'FSEH
1260 PRINT"...AND RANDOM LEVELS[DOWN]
     "'BADG
1270 GOSUB 1310'BEGD
1280 SLEEP 2'BCIE
1290 PLAY"V1X0V3X0":REM TURN OFF
     FILTER'CPUL
1300 END'BACV
1310 SOUND 1,2600,D,,,,2,1024
     :SLEEP D/60+2:RETURN'FAEF
```

END

Listing 3

```
1010 MW=3072'BGIV
1020 TEMPO 15:BANK 15'CHJX
1030 A$="O3DDF#FDDCO2A":A$=A$+A$
     :B$="V1T7X0"'EMHG
1040 POKE MW+4,0:GOSUB 1150'DKDB
1050 POKE MW+4,1:GOSUB 1150'DKEC
1060 FILTER 1023,0,1,0,14
     :REM BAND-PASS'CYYF
1070 POKE 54290,16:POKE 54286,60
     :POKE 54287,0:POKE MW+4,24'FHGJ
1080 POKE MW+5,1:POKE MW+9,20'EMRG
1090 B$="V1T7X1":GOSUB 1150'CHUG
1100 ENVELOPE 6,6,9,6'BICV
1110 FILTER 1023,1,0,0,14
     :REM LOW-PASS'CXOB
1120 POKE MW+4,128 OR 8
     :POKE MW+5,PEEK(MW+5)OR 128
     :POKE MW+9,50:B$="V3T6X1"'LGGM
1130 GOSUB 1150'BEIX
1140 PLAY"V1X0V3X0":END'CCCB
1150 C$=B$+A$:PLAY C$:SLEEP 2
     :RETURN'FOJF
```

END

by Mark Jordan

Sprdef-Plus

Explore the Commodore 128 in its powerful native mode. Some of the articles in this column may be technical, some not so technical—but we guarantee that they will spark your creativity.

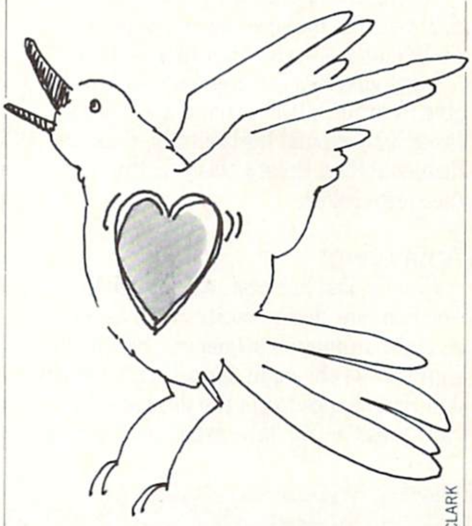
This month's program—Sprdef-Plus (pronounced "spritedef-plus")— verifies everything I said in last month's column. For those of you who missed it (or, perish the thought, who forget what it said) the theme of the column was "Where do good programming ideas come from?" I stated that the best ideas often come while you're working on something else. Sprdef-Plus is such a program. It was conceived while I was working on another program, a game, which would demonstrate animation techniques with BASIC 7.0.

I was in the process of sprite-designing some birds in flight when I wished that the built-in sprite editor, SPRDEF, had just a few more features. At one point I had to save my sprites, go to 64 mode, load in another sprite editor, change all the memory locations, blah, blah, blah, just to scroll my birds down a couple rows on the sprite grid. Too much work indeed.

I decided to crank out a quick and dirty (programmers' talk) sprite roller, a simple BASIC routine that would allow me to move a sprite design down a row or across a column at a time. BASIC, it turned out, was just too dang slow. So I typed M-O-<SHIFT>N and got into the machine language monitor and started doing it in ML. No longer quick, no longer dirty, I had a nifty sprite roller/scroller.

Hmm, I thought. Why not make a sprite flipper while I'm at it? Maybe I can add this as a sidebar to my program. And thus it happened: a horizontal flipper was created, followed by a vertical flipper, followed by a sprite inverter (like a photo negative). At this point my original creation was drawing interest in my brain's inner vaults. But can the world stand another sprite editor? I wondered. Yes, I answered, if it has new features like an animator, multiple sprite designs, etc.

So here it is. If you, like me, were thrilled with the built-in sprite editor that came with your 128, you may think this program superfluous. Why design a new sprite editor when there's one built in? I didn't. You'll notice, if you glance at line 580, that SPRDEF is used within the program (thanks, Commodore, for making it a BASIC command). Sprdef-Plus is a sprite design package.


LINDA CLARK

The program is fairly short, but, as always, it's best to use all precautions when typing it in. That means use the Magazine Entry Program and save it before running it the first time. Got 'er typed? Okay, let's look at it.

Load 'em Up

When you first run the program you'll be given the option to load a previously-saved sprite file. If you haven't saved any then you can bypass this route. If you would like to load an existing sprite file but don't remember its exact name, press the up-arrow to load the directory. If you have a long directory and names go flying by, use the RUN/STOP key to stop it. A TRAP routine will catch this, stop the listing, and allow you to look at it.

One tip: if you plan to save lots of sprite files, why not always begin them with the same prefix? I use "SP." The reason for this is if you simply change the DIRECTORY in line 100 to DIRECTORY "SP.*" you'll be able to display just those files that you've saved as sprite files.

Once past the directory routine (whether you've loaded a file or not) you'll find yourself staring at a two-part screen. The top half is oozing with options; the bottom is your sprite display area. All eight sprites will be displayed at once. If you don't have anything showing it's because you have no sprites defined: you'll have to choose the up-arrow to go into SPRDEF and do some design work. All the rules for SPRDEF that you read in the User's Guide apply. To exit, you must press SHIFT/RETURN then RETURN.

Alright. We've got sprites on our screen. Let's have some fun. First, we need to select a sprite to work on. Let's try sprite number 1. Press 1. Now press + (plus). Watch your sprite shape scroll down (the bottom will roll around to the top). Better press it twenty-one times for now to get it back to the original shape. Now try the minus key (–). The same thing happens but from left to right. This feature can be very handy if you are designing sprites that need to be centered on top of one another or are part of an animation sequence.

Now press H. Mr. Sprite does a flip-flop horizontally. Press V. Mr. Sprite does a flip-flop vertically. By simply copying sprite shapes (go into SPRDEF and press C to do that) you can have both shapes . . . very handy in games where objects need to go back and forth across the screen.

Try the "sprite negative" option—press N. Besides the obvious design effects this inverse image can be quite handy for aligning overlay sprites. And what are overlay sprites all about?

Suppose you have a boy-sprite. You want him to fall in love. Wouldn't it be nice if you could make his heart start to throb in pulsing red? By overlaying the heart-sprite on the boy-sprite, you could simply always move the two together then, when the moment arose, turn the heart-sprite on and cycle it from the background color, to light red, to red, then to the background color again. A true heart-throb.

The sprite-negative option would help you in this way: after the boy has been designed, design a heart separately. Then, using the move-sprite option (simply press the cursor keys to get it where you want), you can move the heart on top of the boy. But beware! While you may get it located exactly where you want, you may not have the two shapes exactly on top of each other. Use N to make negatives of both. You'll likely discover that they aren't lined up. What do you do? Use the cursor keys to line them up, then use the scroller/rollers (plus and minus keys) to align the heart over the body. Ta da! What could be easier?

As alluded to, the cursor keys allow you

to move any of the eight sprites around. This way you can stack them or butt them together to build "The Great, Collosal Sprite." I almost always use two sprites stacked vertically to form a character, one for the head, the other for the body.

Another handy feature about being able to move sprites on top of each other is that you can now design multiple colored sprites. You may say, hey, I can get multicolor from SPRDEF. True. But you'll lose resolution (it's halved). With overlayed sprite shapes you can do some very nifty colored effects.

As you may have guessed, at any point when you want to change sprites you're working on, simply press the number of the one you want. Also, after moving sprites around you may decide you'd like them all back to their original location. Use the RETURN key to reset them.

Saving the shapes is as easy as 1) press S, 2) type the name you want, 3) press RETURN, and 4) wait about nine seconds.

I included two features that are available from SPRDEF: expand and color. Press X to expand horizontally, Y for vertical doubling. Press C to cycle through the sprite colors.

Animation!

Finally, last but best, ANIMATION. You can now design sprites with as many as eight animation sequences. Simply design each of the eight sprites with slightly different shapes to get the desired effect. Now press A. You'll be asked to select the animation sequence. The sprite that is presently selected is the first frame. You should press the number of the other sprites you want to animate in the sequence you want them. Say you want to animate shapes 1, 3, 4 and 6, and say you had sprite 1 selected when you chose the animation option. Press 3, 4 and 6 then RETURN and watch it happen. If you want to speed things up, press the less-than (<) key. To slow it down press the greater-than (>) key. Simple. And fun to watch. Exit the animation by pressing RETURN.

Next month I am going to retrieve that game that spawned Sprdef-Plus. You'll get a chance to see how animation works within a program. Until then, start designing. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Sprdef-Plus

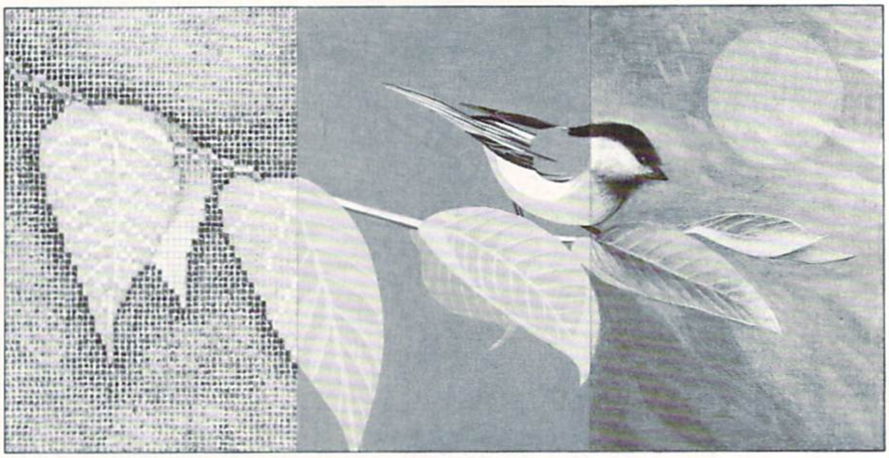
```
10 TRAP 8ØØ'BDKX
20 FOR T=Ø TO 29Ø:READ A$
   :POKE 3285+T,DEC(A$):NEXT'IUSH
30 E$=CHR$(27):L$=CHR$(13)
   :KY$="+-HNVXYC[UP,DOWN,LEFT,RIGHT]
   12345678[UP ARROW]SA"+E$+L$'HVWO
40 SCNCLR:COLOR Ø,1:COLOR 4,1'DIVE
50 CHAR,5,Ø,CHR$(14)+"[L. GREEN]
   [SHFT T]O LOAD A SPRITEFILE PRESS
   * ",1'DLQO
60 CHAR,5,1,"[SPACE2,SHFT A]
   NY OTHER KEY TO CONTINUE[SPACE3]",
   1'BHEM
70 GET KEY A$:IF A$<>"*"THEN 13Ø'GIRI
80 PRINT"[HOME2,L. GREEN]"
   :CHAR,5,2," [SHFT F]ILENAME[SPACE4]
   ([UP ARROW] FOR DIRECTORY)",1
   :WINDOW 5,3,38,3,1'DUVS
90 INPUT F$'BCNF
100 IF F$="[UP ARROW]"THEN PRINT"
    [HOME2]":CHAR,5,3,"[WHITE,SHFT P]
    RESS [SHFT R,SHFT U,SHFT N]/
    [SHFT S,SHFT T,SHFT O,SHFT P]
     TO HALT LISTING[YELLOW]"
    :WINDOW 6,4,34,22:DIRECTORY
    :GOTO 8Ø'IXJS
110 BLOAD(F$)'BFBW
130 TRAP:PRINT E$"M[HOME2,CLEAR]"'CDBB
140 FOR T=1 TO 8:SPRITE T,1,T+2'FLXE
150 YY=Ø:YC=Ø:T1=INT((T+1)/2)
    :IF T1<>(T+1)/2 THEN YY=48
    :YC=6'OIYR
160 MOVSPR T,T1*64+2,148+YY'EOGH
170 CHAR,T1*8-5,12+YC,STR$(T)'FOPI
180 NEXT'BAED
190 CHAR,3,11,"[L. GREEN,CMDR A,
    SHFT *32,CMDR S]"'BGTH
200 FOR T=12 TO 23:CHAR,3,T,"[SHFT -]"
    :CHAR,36,T,"[SHFT -]":NEXT'GTJF
210 CHAR,3,24,"[CMDR Z,SHFT *32,
    CMDR X]"'BGLY
230 A=1:AX=8Ø'CHRC
240 CHAR,4,Ø,"[GRAY1] [SHFT P]RESS
    [UP ARROW] FOR [SHFT S,SHFT P,
    SHFT R,SHFT D,SHFT E,SHFT F,
    SPACE13]",1:IF AN THEN 36Ø'DNYP
250 CHAR,4,1,"[GRAY2] [SHFT P]
    RESS + - TO ROLL SPRITE[SPACE7]",
    1'BHML
260 CHAR,4,2,"[GRAY3] [SHFT P]RESS
    [SHFT H] TO FLIP HORIZONTALLY
    [SPACE3]",1'BHTO
270 CHAR,4,3,"[L. BLUE] [SHFT P]RESS
    [SHFT V] TO FLIP VERTICALLY
    [SPACE5]",1'BHAO
280 CHAR,4,4,"[CYAN] [SHFT P]RESS
    [SHFT N] FOR NEGATIVE SPRITE
    [SPACE4]",1'BHKP
290 CHAR,4,5,"[L. GREEN] [SHFT P]
    RESS [SHFT C] TO CHANGE COLOR
    [SPACE8]",1'BHPQ
300 CHAR,4,6,"[GREEN] [SHFT P]RESS
    [SHFT X] / [SHFT Y]
     TO EXPAND SPRITE[SPACE3]",1'BHWI
310 CHAR,4,7,"[YELLOW] [SHFT P]RESS
    [SHFT A] TO ANIMATE[SPACE13]",
    1'BHFI
320 CHAR,4,8,"[L. RED] [SHFT P]
    RESS CURSOR KEYS TO MOVE[SPACE6]",
    1'BHHK
330 CHAR,4,9,"[ORANGE] [SHFT P]
    RESS SPRITE # (1-8) TO CHANGE ",
    1'BHXK
340 CHAR,4,1Ø,"[BROWN] [SHFT P]RESS
    [SHFT S] TO SAVE, [SHFT R]
    ETURN RESETS ",1'BIXN
360 DO:GET KEY A$:P=INSTR(KY$,A$)
    :IF P=Ø THEN 36Ø'ITVN
370 ON P GOSUB 43Ø,44Ø,45Ø,46Ø,47Ø,
    48Ø,49Ø,5ØØ,51Ø,52Ø,53Ø,54Ø,56Ø,
    56Ø,56Ø,56Ø,56Ø,56Ø,56Ø,56Ø,58Ø,
    59Ø,62Ø'CRKX
```

```
380 IF P>20 THEN EXIT'EDEI
390 LOOP'BAKG
400 IF A$="A"THEN 240'DFHB
410 AN=0:GOTO 130'CHYB
430 SYS DEC("0DE0"),A:RETURN'DFAE
440 SYS DEC("0DD6"),A:RETURN'DFFF
450 SYS DEC("0D43"),,A,0:RETURN'DIQH
460 SYS DEC("0DE9"),A:RETURN'DFJH
470 SYS DEC("0CD5"),A:RETURN'DFDI
480 X=(RSPRITE(A,3)+1)AND 1
    :SPRITE A,,,,X:RETURN'GURO
490 Y=(RSPRITE(A,4)+1)AND 1
    :SPRITE A,,,,,Y:RETURN'GVOP
500 C=(RSPRITE(A,1)AND 15)+1
    :SPRITE A,,C:RETURN'GTTG
510 XX=0:YY=-1:GOTO 550'ELEF
520 XX=0:YY=1:GOTO 550'DLOF
530 XX=-1:YY=0:GOTO 550'ELEH
540 XX=1:YY=0'CHVG
550 MOVSPR A,+XX,+YY:RETURN'EJBJ
560 A=VAL(A$):SPRITE A,0:FOR I=1 TO 50
    :NEXT:SPRITE A,1:RETURN'JWEP
580 IF A$="[UP ARROW]"THEN SPRDEF
    :RETURN'FENL
590 WINDOW 0,0,39,0,1:INPUT"[SHFT F]
    ILENAME";F$'CPIP
600 BSAVE (F$),B0,P3584 TO P4096'CTAF
610 RETURN'BAQB
620 AN=0:AC=0:AN(0)=A'DOCH
630 WINDOW 0,0,39,0,1:PRINT"[SPACE3,
    SHFT S]ELECT SEQUENCE (1-8) THEN
    [SHFT R]ETURN[SPACE4]"'CMIR
640 DO'BAJE
650 GET KEY B$:IF B$=E$OR B$=L$THEN
    EXIT'ILSN
660 B=VAL(B$):IF B=0 THEN 650'FLEL
670 AN=AN+1:IF AN>8 THEN AN=8
    :EXIT'HNVP
680 AN(AN)=B:SPRITE B,0:FOR I=1 TO 50
    :NEXT:SPRITE B,1'HXBR
690 LOOP'BAKJ
710 PRINT"[WHITE,RVS,SPACE2]
    <> TO CHANGE SPEED - [SHFT R]
    ETURN TO EXIT[SPACE3,RVOFF]"'BAYN
720 DO:GET B$:IF B$=E$OR B$=L$THEN
    EXIT'IMLL
730 IF B$="<"THEN AX=AX-10
    :IF AX<0 THEN AX=0'JPRN
740 IF B$=">"THEN AX=AX+10'FITK
750 POKE 2039+A,55+AN(AC):AC=AC+1
    :IF AC>AN THEN AC=0'JDNS
760 FOR I=1 TO AX:NEXT'EFPK
770 LOOP:PRINT"[CLEAR]"'CBHK
780 POKE 2039+A,55+A:WINDOW 0,0,39,
    24'EUQP
790 RETURN'BAQK
800 RESUME 80'BCLD
810 DATA 20,88,0D,A0,3F,B1,FA,99,00,
    0C,88'BHAK
820 DATA 10,F8,A2,3E,A0,02,BD,00,0C,
    91,FA,CA,30,11,88,10'BWYO
830 DATA F5,18,A5,FA,69,03,85,FA,90,
    02,E6,FB,4C,E4,0C,60'BWJP
840 DATA A2,02,86,FA,A0,03,38,BD,FE,
    0B,30,01,18,3E,00,0C'BWBQ
850 DATA CA,88,D0,F9,E6,FA,E6,FA,E6,
    FA,A6,FA,E0,3F,90,E4'BWJR
860 DATA 60,A2,02,BD,3C,0C,9D,F0,0B,
    CA,10,F7,A2,3C,BD,00'BWLS
870 DATA 0C,9D,03,0C,CA,10,F7,A2,02,
    BD,F0,0B,9D,00,0C,CA'BWKT
880 DATA 10,F7,60,A9,0E,85,FC,A9,00,
    85,FB,CA,F0,0C,18,69'BWIU
890 DATA 40,85,FB,90,F6,E6,FC,4C,4B,
    0D,20,7B,0D,8D,FF,0B'BWFV
900 DATA C8,20,7B,0D,91,FB,C8,20,7B,
    0D,88,88,91,FB,C8,C8'BWAN
910 DATA AD,FF,0B,91,FB,C8,C0,3F,90,
    E0,60,A2,08,B1,FB,4A'BWEO
920 DATA 26,FD,CA,D0,FA,A5,FD,60,A8,
    A9,0E,85,FB,A9,00,85'BWUP
930 DATA FA,88,F0,0E,18,A5,FA,69,40,
    85,FA,90,02,E6,FB,4C'BWGQ
940 DATA 91,0D,60,20,88,0D,A5,FA,85,
    8C,A5,FB,85,8D,A9,0C'BWOR
950 DATA 85,FD,A9,00,85,FC,20,CC,0D,
    60,EA,EA,A5,8C,85,FC'BWVS
960 DATA A5,8D,85,FD,A9,0C,85,FB,A9,
    00,85,FA,A0,40,B1,FA'BWBT
970 DATA 91,FC,88,10,F9,60,20,A3,0D,
    20,00,0D,4C,BC,0D,EA'BWDU
980 DATA 20,A3,0D,20,21,0D,4C,BC,0D,
    20,88,0D,A0,3F,A9,FF'BWNV
990 DATA 51,FA,91,FA,88,10,F7,60'BXWR
```

END

by Matthew Leeds

The VCR Connection


MIA BOSNA

Three-dimensional animated graphics; glowing, rotating titles; ray-traced perfect mirrored spheres; the big excitement on the Amiga these days is based on graphics created for use on videotape. Cable television, network programming, industrial video, educational television, everywhere you look you see examples of video created using the Amiga. Just what does it really take to get the Amiga's amazing graphics on videotape, and why does it depend on what you will be actually using the videotape for?

The physical process of connecting an Amiga to a VCR is simple if you own an Amiga 1000—just connect one end of an RCA-type cable to the video output jack of the Amiga and the other end to the video input jack (not the RF input) of your VCR. The 1000 has a built-in NTSC encoder that produces color video output. If you own an Amiga 500 or 2000 you will need some device that will produce color video for you.

NTSC (National Television Standards Committee, a.k.a. Never Twice Same Color) is the standard set for color video used in the U.S., Canada, and other parts of the world. It was created as a compromise during the transition in the early 1950s from broadcast black and white television to broadcast color television. The fledgling television industry could not afford to alienate the installed base of black and white TV set owners with the introduction of an incompatible color system. NTSC was devised as an acceptable solution: it appeared as a black and white image on existing black and white sets while providing color on the new color sets.

Like most compromises, quite a bit was given up to satisfy all of the interested parties. Color video starts its life as three separate signals: Red, Green and Blue. Odds are that the monitor you use with your Amiga is capable of receiving these signals directly; that is, it is an RGB monitor. Video signals sent as discrete R, G and B are far sharper and cleaner than NTSC video. But some way had to be found to keep the same broadcast signal functional on both black and white and color sets.

The solution was to split the signal into two components: a luminance portion that would work on black and white sets, and also serve as the base for the brightness levels on a color set; and a chroma signal that would overlay the color information on the luminance information.

The chroma signal is created by mixing the R, G and B signals into a single signal that can be decoded later by a television set into its component elements. The luminance and chroma signals are mixed to create the final NTSC signal which is broadcast, received by your TV, decoded into luminance and chroma, the chroma decoded into R, G and B. Unfortunately, this process of encoding and decoding loses something along the way.

Nevertheless, since we live in an NTSC world (see "What's Coming Next in Video"), you will need an NTSC video signal to record on your VCR. For Amiga 500 and 2000 owners several solutions are possible. The least expensive is to purchase an RGB to video encoder. Notice I said "video" encoder. As long as we are operating at the low end of the price spectrum, any encoder you purchase will not truly be an NTSC encoder, although for most practical purposes it will be close enough. I'll discuss "NTSC RS-170A Broadcast Quality" a little later on.

An excellent choice for a video encoder is produced by Creative Microsystems. It is offered in two basic models for the Amiga 500 (an external box) and the Amiga 2000 (an internal board). Each 500 version connects to the RGB port, and one provides composite video output and separate chroma and luminance output. The other 500 version also offers RF output. If your VCR will not accept video input, you may need this version. The 2000 versions offer the same options. The 500 versions do not offer a passthrough of the RGB port. A second option is to purchase a low-cost genlock made specifically for the Amiga. All genlocks currently made for the Amiga include a video encoder as part of their functionality. They also offer the added advantage of letting you overlay your Amiga-created graphics on an existing video image (see June 1988 *Commodore Magazine* for details). Mimetics AmiGen is one possible choice.

If you are planning to use your Amiga-generated images for something more elaborate than home videos, you may want to consider a higher quality encoder system. Digital Creations' SuperGen currently looks to be the most affordable solution to the "broadcast quality" dilemma. An NTSC video signal contains much more than just luminance and chroma information. Synchronizing signals control the horizontal and vertical alignment, and a reference "black burst" signal is used to control the color phase relationships between different video sources and to allow editing from one video source to another.

There are other differences between the quality of video created by the Amiga, consumer grade VCRs, and the equipment used to produce video for professional use. A significant consideration is the number of generations you can go before copies drop below acceptable quality. A second generation (copy of a copy of a master) tape on a consumer VCR looks bad. Compared to the original its colors are desaturated and no longer true, fine detail is lost, and color fringing has become a permanent part of the image.

You can improve the quality of multigenerational copies somewhat on newer decks through the use of "dub" switches that turn off equalization used to improve the video image when it is shown on a monitor. The equalization boosts the signal, overdriving the recording deck during dubbing and distorting the copy.

As you dub from one VCR to another

VCR, the tape speed of the playback VCR is controlled by the speed of the motor driving the tape transport mechanism. Any small variation in the speed of the tape transport can result in timing errors in the video signal. Think of wow and flutter on a phonograph. Now imagine the effect of those timing errors on the video signal being output by the playback VCR. The synchronizing signals that allow for genlocking, editing and proper phase relationships between chroma and luminance become distorted. These errors are called time base errors.

Time base errors are one reason for the generational quality loss found in consumer VCRs. More importantly, professional-grade recording and editing equipment will not accept a video signal with time base errors. The fluctuating sync signals make it impossible for an editing system to "lock up." Time base errors can be corrected through the use of a time base corrector (TBC).

Early TBCs were essentially mechanical in nature. They sensed errors in the playback speed of a VCR and through a feedback loop controlled a servo that adjusted the speed of the tape transport of the playback VCR. This type of TBC has been largely replaced by the digital TBC. Digital TBCs are digital still stores that can accept a video signal with time base errors, store a portion of it as it comes in, strip off the sync portion of the signal, regenerate a new sync signal and output the video signal with no timing errors.

NTSC video is composed of two fields of interlaced video lines that make a single frame of 525 lines. Digital TBCs are rated by how many lines they can store. It is not necessary to store the entire frame to correct most timing errors, but newer digital TBCs can perform other functions. A full frame TBC, called an infinite window TBC, can double as a digital freeze frame since it can retain a full NTSC frame.

Videotape is not a perfect medium. The metal oxide coating can flake or scratch. A missing piece of oxide coating can result in a glitch in the video playback called a dropout. It generally appears as a missing line in the video signal. Since the change from line to line is often minimal in a single video field, replacing the missing line with either the preceding or following line will often look better than leaving a white "hole" where the dropout occurred. Many digital TBCs offer automatic dropout correction.

Time base correctors are expensive. If you are not creating video for commercial or broadcast use, don't even think about purchasing one. The price of all digital equipment is falling, but TBCs are still in the two to three thousand dollar price range for anything worth getting.

Coming down to earth—from a price perspective—there are quite a few things you can do to improve the quality of video you create with your Amiga. First and foremost, keep in mind that the quality of the image you see on your RGB monitor is far better than that you will ever see once you've recorded the image. You should always preview your Amiga-generated images on a composite video monitor before you record them. Make certain that you always record images from your Amiga in interlaced mode. The three interlaced display modes on the Amiga are 320×400, 32 color; 640×400, 16 color and 320×400, HAM mode. NTSC is always interlaced, and if you attempt to record non-interlaced images you will have no luck editing them later.

When you preview your work on a composite video monitor, you will notice several things. Thin horizontal lines tend to disappear. Contrasty images jitter a lot. Certain color combinations tend to bleed, and others have a peculiar dot crawl that occurs at the borders of two contrasting colors. Most of these are NTSC artifacts, a result of the encoding process. The best solution is to create your original while working on a composite video monitor. That way you will not be in for unpleasant surprises.

Make all of your recording at the fastest tape speed your VCR will support. Avoid long play or extended play modes as they have a detrimental effect on recording quality. Always use premium quality videotape, and whenever possible use new tape. Rerecording over an existing recording can sometimes lower the quality of the result. Keep the heads on your VCR clean. Even a small buildup of oxide can keep the videotape from making good contact with the recording heads of your VCR. Follow the manufacturer's instructions on cleaning the heads. If your VCR has seen several years of use, you may want to consider taking it in for a tuneup. Over a prolonged period of use it is possible for the heads to get out of alignment. Properly adjusted video recording heads can make a vast improvement in an otherwise serviceable VCR.

Use a good quality shielded cable to connect your VCR to your Amiga. Keep the cables connected to your VCR untwisted and in good repair. Cleaning the RCA jacks and cable connectors can improve the connection and improve the video signal. Avoid letting power cords cross over video cables, as it is possible for the magnetic field created by the AC current to adversely affect the video signal carried in the video cable.

Next month I'll take a look at editing on a VCR. I'll examine the equipment available to you at home and the equipment used in professional editing bays. I'm also interested in seeing what you've done in video with your Amiga. You can send tapes in care of this magazine.

What's Coming Next in Video?

Thirty years is a long time to stick with one standard. NTSC has limited the resolution of video at the consumer level both at the broadcast end and at the home recording end. All that is changing with the introduction of several innovations.

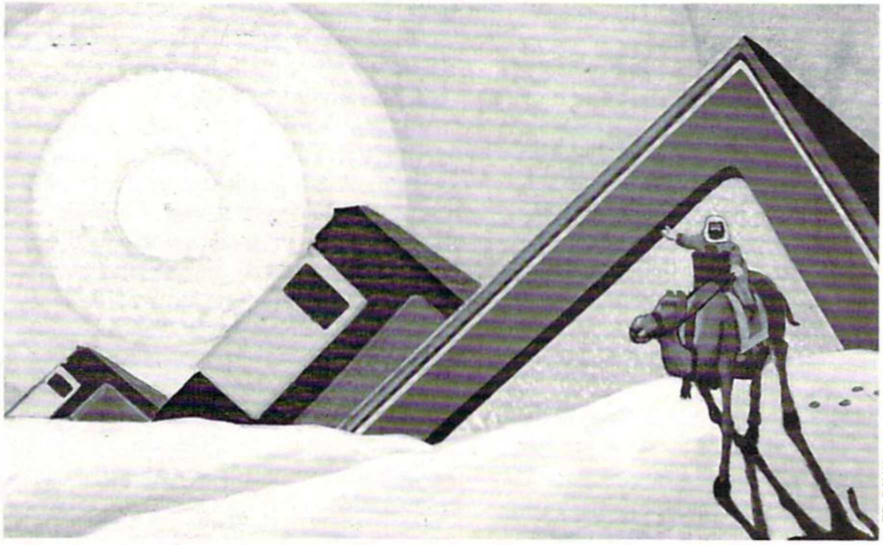
S-VHS is an improved version of standard VHS VCR recording. It offers a remarkable improvement in the quality of recorded images on consumer grade VCRs and acceptable quality in multi-generational copies. These improvements are brought about through the separation of the luminance and chroma portions of the video signal during recording. The connection between camera, VCR and improved monitor (capable of displaying a signal from S-VHS) is through a special S connector. S-VHS camcorders, VCRs and monitors are on the market now, but at substantially higher prices than standard VHS products.

ED-BETA is an improved version of standard BETA VCR recording. It also uses a system of separating the luminance and chroma when recording on tape and playing back to a special monitor. The projected specifications of ED-BETA are even higher than those of S-VHS. ED-BETA is not available at this time.

Neither S-VHS or ED-BETA are broadcastable. Although they offer dramatic improvements to current NTSC images, they do not address the need for a new high-definition broadcast standard (HDTV). Research has been going on for several years for a new standard that offers higher resolution, better sound, a wide screen and compatibility with existing television sets. Still several years away from commercial availability, at least one solution is getting a lot of favorable press—ACTV. Proposed by GE/RCA, it offers 440 lines of horizontal resolution, 1050 scan lines in place of the current 525, a wider screen 5:3 aspect ratio (current is 4:3), and two channel digital stereo sound.

by Graham Kinsey

Amiga Public Domain



ED SAUK

First of all, I would like to confirm that I have indeed written a special article on the best of Amiga Public Domain Software released in the past year, as mentioned in last month's column. Unfortunately I wasn't able to make the deadline for the July issue. The good news is that it will be a feature article in next month's *Commodore Magazine!* So hang tight until then, gang. The feature will include programs reviewed up to the June 1988 installment of this column. All of the programs I have reviewed this month weren't eligible for these awards, but they are eligible for the awards I will be doing next year.

As far as this month's Amiga PD column goes, Fred Fish has apparently been on a vacation from the Amiga scene, since he still has not released any new Fish disks. I did however get AMICUS disks 23 through 26 this month, so those plus the normal load of new Amiga PD programs from PeopleLink's AmigaZone will be reviewed this month.

The gems this month are VirusX, a more powerful virus checking program than VirusCheck; Rez, a resident program which is really public domain; and DrZorb and GhostPool, two fantastic animations. There has also been a major update to ARP.

For each program the author is given, and if the PD program is available on the AMICUS series of public domain disks the number is given before the description. If I get a PD program directly from PeopleLink's AmigaZone, I list the AmigaZone download file number (if no file number is given the program still may be on PeopleLink, but I obtained it somewhere else). When a public domain program has been classified as shareware, this is also mentioned with the suggested amount.

DiskWipe: by Doug Walker (AMICUS #25)

If you regularly find yourself deleting everything on a disk at once, DiskWipe can save you some time. DiskWipe, unlike the AmigaDOS DELETE command will delete files from multiple disks at one time, issuing a prompt when you should change disks.

SpTil: by Mark Gault (AMICUS #25)

SpTil is a print spooler that unlike most spoolers has a nice user interface that includes a menu set and two directory windows. SpTil allows you to control variables like print quality, characters per inch and page breaks. SpTil also has a separate Forms configuration file that you can edit in order to change such things as margins, headers/footers, tabs and lines per page. Even while the spooler is in the process of printing files you can still alter settings for each file that hasn't yet been printed. *WARNING:* When I first load SpTil, the error handler program I run in my environment (GOMF 2.0) informs me that SpTil attempts to trash the low area of system memory. Therefore, use this program *at your own risk.*

BMP: by J.L. White (AMICUS #26)

A simple digitized sound player that will run in the background. BMP is compatible with either the IFF 8VSX or FutureSound format. There are two versions of the program, one which will play a sound only once while the other will loop forever until you tell it to quit.

DC: by John Youells (AMICUS #26)

If you use a 5.25-inch floppy drive on your Amiga but are sick of having to use the DISKCHANGE command from CLI, DC will allow you to accomplish the same thing from Workbench.

Boing3D: author unknown

An animation created with *Sculpt/Animate 3-D* of a well-known alien (courtesy of *DeluxePaint II*) inside a spaceship orbiting an "Amigatized" planet.

Conman version 1.1

Conman is a great program which adds (among other things) line-editing and command histories to the CLI. This is an update to the version of Conman reviewed in the October 1987 installment of this column. Among the new improvements, Conman can now be opened with its own device called CNC:, which allows you to keep the CON: device intact in case a program objects to a CON: window altered with Conman. Workbench support has been added for Conman. Now you can not only load a Conman window from Workbench, but you can also install Conman on any system disk via Workbench. You can now use the F5 and F6 keys to scan through the history buffer in addition to the up and down arrows. There is now a hotkey to clear the history buffer. There is also a separate program to save (and load) a history set.

Emit: by Justin McCormick

The Amiga's serial port (unlike that of most microcomputers) is capable of transfer speeds far beyond the conventional limit of 19.2Kbps. Emit is designed solely for null modem transfer between two Amigas. Emit will transfer a file at an incredible 280Kbps. That rate is faster than the Amiga's floppy disk drives (which aren't slow pokes to begin with when it comes to direct transfer rate). The author created this program to facilitate an efficient development environment with two Amigas connected by a null modem cable.

Fix_1: by Bryce Nesbitt

This patch fixes two major bugs in the 1.2 Kickstart code, but does it in memory. Therefore, all Amiga owners (not just Amiga 1000 users) can benefit from this

fix. The two bug fixes are the "freed memory twice" bug that commonly produces a Guru, and a fix to the Alert() function which at the moment does not handle memory configured at the $C00000 location correctly. This second bug can cause any recoverable alert to be fatal and cause other fatal alerts to not even show the Guru Meditation alert box.

SuperView: by David Grothe

SuperView is a full-featured IFF picture display program. It supports many aspects of IFF ILBM pictures, including overscan, color cycling and HAM, in addition to all the normal modes. If you give SuperView the name of an animation stored in IFF ANIM format, it will display the first frame of the animation. SuperView also displays IFF ACBM (the format used by AmigaBASIC) pictures. SuperView can be used from the Workbench. CLI users can specify multiple pictures on one command line. Included with the SuperView is a separate program that allows artists to add a new IFF ILBM chunk called "Author" which adds a text file of up to 1K in size to the picture for display. Naturally SuperView supports this new ILBM chunk.

ZipCopy: author unknown

Here is a simple disk copier that can make multiple copies. This is done by reading in the source disk entirely to RAM. You will need at least a megabyte of extra memory in order to use this feature. This program uses arp.library, which is included with the program (for those who haven't installed ARP on their Workbench disk yet).

DrZorb: by Timothy Hanna

A dazzling and very bizarre animation with digitized sounds that was created with *The Director*. You are treated to haunting digitized sounds as well as a digitized skull that suddenly starts rotating wildly. This would be a good spooky program to show off during Halloween. This animation requires at least 1MB of memory in order to run.

Jet: by Keith Fellenstein

This *Sculpt/Animate 3-D* animation is based on a stunning picture by none other than the famous Amiga artist James Sachs.

VirusX: by Steve Tibbett

Although VirusCheck was the first virus checker to come out, this one is much better. First of all, unlike VirusCheck, VirusX does indeed support Workbench. Needless to say that is a big improvement, since those users who refuse to use CLI have not been able to confidently check for a virus until now. Unlike VirusCheck, you do not have to execute VirusX each time you want to check a disk for a virus. Instead VirusX is continually present once it is run, so once you run the program it remains there until you kill it.

Once VirusX is executed it will check each and every disk for a virus or for a non-standard boot block as soon as it is inserted in a drive. When VirusX detects a virus or a non-standard boot block, it brings up a big system requester, warning you that the boot block on this disk is nonstandard. You then have the option of telling VirusX to re-install the suspect disk or to ignore the situation. VirusX even keeps statistics concerning the disks it has checked so far.

Warp version 1.1Z: by MADD

This is an update to Warp, a program reviewed in last month's "Amiga PD Update." Warp is a file archiving program that works with disk tracks instead of disk files. The big improvement in version 1.1Z of Warp is that it will now check for the virus if you ask it to archive track zero (which of course contains the boot block where most, if not all, Amiga viruses live) on any disk. If Warp finds any virus on track zero, it will not only inform you of this, but it will also refuse to archive a track with a virus on it. Therefore you can be sure with this version of Warp that you cannot give a virus to somebody by accident. I think that alone is sufficient reason to use Warp over any other track archiver like Tracker.

DFDelay: by Kevin Sproule

Here is yet another program that speeds up floppy disk access by decreasing the step rate of the head. The big difference with DFDelay is that it will also allow you to change the settle rate, which determines how long AmigaDOS allows a head which has just been moved to settle before accessing the drive.

Rez: by Jim Goodnow II

No longer do Amiga users who crave the power of making often-used commands resident have to resort to buying a commercial shell or using the old Resident program which really is *not* in the public domain. Jim Goodnow, the author

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of the Aztec C compiler from Manx has given Amiga users another alternative.

For those who don't understand residency, making a command "resident" means that the command's code remains in memory, even while it's not being used, and when the user wants to use the program, the code that is already in place in memory is immediately executed without AmigaDOS having to load anything into memory. Unlike using a ram disk or using a caching program, residency eliminates the wasteful use of memory caused when the program is effectively loaded into memory for the second time, occupying twice as much memory as it needs in order to run.

Rez allows you to make more than one command resident at a time. It can also report information about the resident list, which includes whether a resident command is currently running and how many times each command has been executed. Rez also informs you on how well behaved each resident command has been so far, including whether the program has tried to modify its own code (which makes such a command dangerous to the integrity of the system when made resident).

Startup: by Weston Fryatt and Paul Davis

If you would have several system disks that are basically the same except for the startup-sequences on each, you'll like Startup. Startup allows you to have up to five different startup-sequences on one disk, and then choose which startup-sequence you want executed each time you boot your Amiga. The program has a built-in user-definable timer that will automatically execute the default startup-sequence in case you happen to be occupied when your Amiga is booting.

ARP version 1.1: by Charlie Heath (and many others)

This is an update of ARP (AmigaDOS Replacement Project), which was last reviewed in the April 1988 installment of this column. Replacement commands for LIST, DATE, WAIT, SETDATE, SEARCH, INSTALL, COPY, ASK and WHY have been added to the original set of replacement commands first added in the premier version of ARP. A new Resident command (which of course is not present in Workbench 1.2) has been added to the set of ARP commands (please see Rez above for a brief explanation of residency).

An improved version of Run, called ARun has also been added. ARun's new features include knowledge of the resident list, plus the ability to specify the stack size and priority of the program. As a result of these major updates, the slew of programmers behind ARP have achieved their initial goal: elimination of the BCPL AmigaDOS commands with faster, smaller and more powerful (but still backwards-compatible) replacement commands written in C.

The only AmigaDOS commands that still haven't been replaced are either commands that are already written in C (like FORMAT and DISKCOPY), or those that are simply much tougher to replace than the other AmigaDOS commands were and will require much more time before an ARP replacement appears for these problem commands. Unfortunately ARP was not finished in time to include with version 1.3 of the Workbench disk, but I see no reason why ARP won't eventually be included in subsequent versions of Workbench.

ACO version 3.0: by Steve Pietrowicz

This is an update of ACO, a graphical teleconferencing program (for use on the online service PeopleLink) which was featured in the December 1987 installment of this column. ACO is now even more enjoyable than before because digitized sounds have been added! The digitized sounds are selected similarly to the way you select which custom face to display. Over a dozen sounds are available to send to everybody else in conference in the first release of ACO 3.0. You can also create your own digitized sounds and upload them for approval to be added to the current set of digitized sounds available within ACO.

Unfortunately, since digitized sounds take up much more space than a custom face, every ACO user cannot have their own personal set of sounds. (If this were allowed, the size of an ACO sound library would soon surpass the capacity of a floppy disk.)

Cube: by Andy Lochbaum

If you are interested in special-effect graphics generating programs, here's a simple program you might want to use. Cube allows you form a cube with three different lo-res IFF pictures. The dimensions for the cube are stored as a separate text file, and you can alter this file to suit your needs.

Macfont: by Rico Mariani

Although there are many sources for fonts for the Amiga, it never hurts to be able to get more. And what could be better than to access the thousands of fonts available on the computer that started the desktop publishing craze? Macfont allows you to transform Macintosh fonts into Amiga fonts. However, you will have to figure out how to move the Macintosh fonts to your Amiga. Fortunately a utility called "unpack" is included which will allow you to unravel Macintosh fonts compressed with one of their most popular file archivers.

GhostPool: by Dr. Gandalf

A fantastic *Sculpt/Animate 3-D* animation. GhostPool simply shows a game of pool being played by an invisible person. This interlaced HAM animation is very colorful and also contains many digitized sounds, including a couple of phrases by the author at the end of the animation. This animation requires 1MB to run.

Eeeks!: by Crystal Bonachea

This *Sculpt/Animate 3-D* animation is a short but humorous statement about the current crop of Amiga viruses infecting the Amiga community. This animation does have digitized sounds.

Last minute note: Just as I finished this column I received Fish disks 129-138, so look for reviews in August's column! And of course be sure to look for the Amiga PD awards in the August issue of *Commodore Magazine!*

As always, I can be reached on the AmigaZone on PeopleLink (ID: G KINSEY), or on the IDCMP BBS (617) 769-3172 (please note the *NEW* number!), now running 24 hours a day, addressed to SYSOP. If you have written a public domain/shareware/freely distributable program, or have obtained one that you think is worth mentioning to all Amiga owners, then please attempt to contact me via the above contacts, or through *Commodore Magazine*. See you next month.

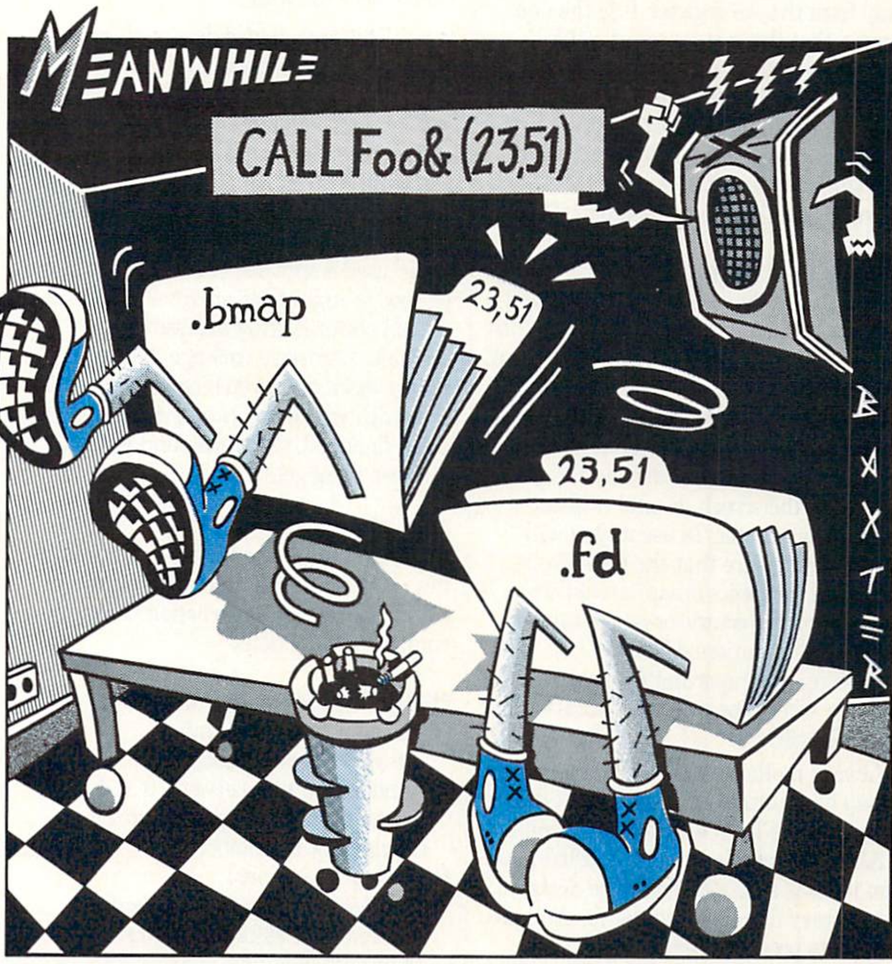
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by Tim Jones

AmigaBASIC Tutorial



In our last installment, we took a look at the conversion process that changes the .fd files on the Extras: disk into the .bmap files that AmigaBASIC needs to access the various libraries available on the Amiga. We also included a patch for the ConvertFD file, written by Carolyn Scheppner at Commodore, that would ease the conversion process.

This time out, let's take a look into a .bmap file to see exactly what's included and compare what we find to the associated .fd file. Let's build a .fd file for an imaginary library called cbm.library. In this library, we'll have two simple functions: the ever popular Foo function with its associated counterpart, the Bar function. Our cbm_lib.fd file looks like this (you can create it with any text editor, or use "Copy * cbm_lib.fd" and type the lines in carefully using a CTRL-\ to end your typing):

```
##base _CBMBase
##bias 30
##public
Foo(XVar,YVar)(D1/D2)
Bar(XVar,YVar)(D1/D2)
##end
```

Now that we have a pseudo .fd file, let's run it through ConvertFD and turn it into a .bmap file. (Keep in mind that this library won't do anything.)

Once you have the .bmap file, you can then call a function by simply using its name in an AmigaBASIC CALL statement. For example, if the Foo function expected the X and Y coordinates of a certain pixel on the screen, but didn't return any value to the calling program, you would set your AmigaBASIC program up with the following lines (once again, this is just for demonstration purposes):

```
LIBRARY "cbm.library"
setup, etc . . .
CALL Foo&(23,51)
or
Foo& 23,51
```

However, if the Bar function returns a value to the calling program (i.e., the status of the pixel in question), you must initialize it as a LIBRARY FUNCTION before calling it so that AmigaBASIC doesn't think that it is an Array variable and treat it as such. To do this, our calls would appear as follows:

```
LIBRARY "cbm.library"
DECLARE FUNCTION Bar& LIBRARY
' So it knows
setup, etc . . .
pStatus& = Bar&(23,51)
```

Note that the first format can be used with either the CALL function or simply by using the function name. However, the second value returning form must be used as shown in order for the returned value to be processed properly.

So far as the mechanics of such functions are concerned, we have informed AmigaBASIC, through our converted .fd file, that the variables that we are passing to the functions should be placed in the D1 and D2 registers of the 680XX in the order that they are passed. In this instance, 23 would be placed in D1 and 51 would be placed in D2. In the event of a value returning function, AmigaBASIC expects the returned value to be returned via the D0. This is true even if one of the values passed to the called function is placed into it.

So far as register access is concerned, AmigaBASIC is limited to the D0-D7 and A0-A4 registers. When you ran ConvertFD on the "exec_lib.fd" file, you probably noticed a warning about a function or two not being included because they used a register that AmigaBASIC couldn't access. In the case of Alert, it was due to the function's use of the A5 register.

If you are in a situation that is leading you to create your own libraries, it is strongly suggested that you keep this in mind, as you may be caught with a useless piece of code if you utilize any of the high-end A registers. Also, you should keep in mind that registers D0, D1, A0 and A1 are considered "scratch registers" and may be used without worrying about their contents before or after your calls.

Even though you can't access it from a BASIC call, I will mention that any function that you write should stay clearly

away from the A6 register. It is the one register that the system reserves for library base address information. When you open your libraries, the base address is placed here, and the offset address listed in the associated .bmap file is combined with the address to tell AmigaBASIC where to find the function being called.

What's in a .bmap file?

Now that we've made the .bmaps and discussed their relationship to the .fd files and the libraries involved, let's take a look inside one.

LISTING 1 is a file that will read out the contents of the .bmap file that you are interested in and either display the information on the screen or send it (formatted) to your printer. To use it, you will need to make sure that the files "dos.bmap" and "graphics.bmap" are either in your current directory, or in the Libs: directory, as I mentioned before.

To recap the important features to remember when working with libraries in AmigaBASIC:

- Always make sure that the appropriate .bmap file is either in your current directory, or in the Libs: directory (preferable).
- Always remember that if a called function returns a value, it must be declared as a library function in order for AmigaBASIC to properly handle it.
- If you are in doubt as to whether a function returns a value, declare it. Better still, get copies of the two books:

Amiga Programmer's Handbook (2nd Edition) by Eugene Mortimore, $24.95, Sybex Books.

The AmigaDOS Manual (2nd Edition) Commodore-Amiga, Inc., $24.95, Bantam Computer Books.

- Upon ending your program, ensure that you issue a LIBRARY CLOSE statement.
- Called functions should always be referred to as LONG (i.e., the names should end with an ampersand (&) or be declared LONG via a DEFLNG statement in the startup section of your program. If you don't do this, you'll get an Overflow error.
- If you've been using version 1.1 of Kickstart and Workbench and are now using version 1.2, be sure to update your .bmap files with the new .fd files included on the 1.2 EXTRAS disk.

Hopefully, I have shed some light on the mystery behind the .bmap files and how to call library functions from within an AmigaBASIC program.

Until next time . . .

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versa. This open-ended design gives you the freedom to produce high-quality records and reports for financial, statistical and lab use. The more you use the applications, the more creative you'll get at integrating them.

User friendliness makes *geoCalc* a standout in the spreadsheet field. If you've never used a spreadsheet before, you'll be pleased to know that arithmetic and statistical power is truly accessible in an affordable, attractive package. If you're more experienced, you'll enjoy the relative ease with which you can perform sophisticated financial, statistical, and scientific number management.

geoCalc specs

Here's a list of the higher-end capabilities of *geoCalc*. The manual explains (in detail) the actual construction of formulas using these functions.

Higher Mathematical Functions:
Absolute Value of number
Integer part of number
Random number between 0 and 1
Round number to nearest integer
Square root of number
Statistical Functions:
Average of values in argument list
Maximum of values in argument list
Minimum of values in argument list
Sum of values in argument list
Financial Functions:
Future value of series of equal payments, invested at a certain interest rate, over a specific term
Single loan payment, based on a particular principal, per term of the loan, and period interest rate
Present value of a series of equal payments, invested at a certain interest rate made over a term of payment
Interest rate of a loan based on a particular principal, final value (or sum of the payments), and over a specific term
Term of a loan equal payments, at a certain interest rate with a certain final value (or sum of payments).
Scientific Functions:
The value e raised to the number power
Log of number, e (natural log)
Log of number, base 10
The number pi
Trigonometric Functions:
2-quadrant arc tangent of number
Cosine of number
Sine of number
Tangent of number

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joystick to manually move the cross hairs across the sky in the hope of targeting fast-moving, constantly turning hordes of aircraft. When hit, they burst into flames with a cloud of smoke and fall into the sea. This part is tricky, as for some reason your natural tendency is to move the joystick in the opposite direction of the guns' actual vertical movement. Of course, you can always scurry to the bridge and activate the automatic systems to control the guns for you.

Finally, the depth charge screen, which looks out over the stern of the destroyer, is used to destroy submarines. Each of four launchers can be activated after which you must set the depth that you want the charge to explode (no hints or advice given as to the appropriate numbers here). Then simply push the fire button and watch the depth charges fire into the water. With any luck, you should sink a sub.

The simulation itself is highly enjoyable. The appeal of *Destroyer* is that it is not a long game, you *can* win, and it doesn't require tranquilizers to endure as many other simulations do. You can make it as easy or as difficult as you like. If you set the weapons systems on automatic control, you don't even have to do battle yourself.

The graphics and sounds have obviously been enhanced for the Amiga. Epyx should have gone one step further and permitted use of the mouse; I have found that moving from one switch or control to another by jiggling the joystick in all directions is rather tedious and inaccurate. Additionally, it would have been nice if a pause option were available. While moving from screen to screen seemed to take a long time (due to disk access time), those with at least 1MB of memory could speed up the simulation significantly by loading and running the program and data files from RAM. Thankfully, this was easy to do even though the program is copy protected. The instructions are short but complete. In the subhunter scenario, however, ignore the screen instructions directing you to stay in the SW quadrant, because you won't find a sub there. While the program will run on 512K memory, you must disconnect any external drives or it will not work. *Destroyer* is for war gamers who enjoy an easygoing but exciting simulation on the high seas.

*[**Editor's Note:** Epyx has also released a Commodore 64 version of* Destroyer, *which is available for $39.95.]*

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the program. Because of these drawbacks, you probably won't see as many user-created games for this program as have cropped up for other programs that include construction sets. I like the "Doomfane" game you get with *Demon Stalkers* but suggest you think twice before getting it to do any serious Dungeon Construction work—or with hopes of playing games created by other people.

Adventuring on the Amiga

There are two outstanding Amiga conversion to watch for: *Moebius* and *King of Chicago*. Moebius takes place in an Oriental fantasy world and combines a highly original magic system with action-packed kung fu and sword-fighting sequences. Your goal is to track down a renegade monk and reclaim the Orb of Celestial Harmony, which involves solving four individual scenarios in the Realms of Earth, Air, Fire and Water.

The mouse and icon interface is outstanding. It took me a week to master the original game's complex system of keyboard commands for combat. For each combat option in the Amiga version, you see an icon depicting a man lunging, thrusting or making another kind of attack. Thanks to this remarkable interface, I was able to dash right in and defeat the first scenario's Evil Warlord in a matter or minutes. (The keyboard commands are still available, and you can use the numeric keypad if you prefer.) Sound effects and music are also number one with a bullet. Or should that be number one with a sword?

King of Chicago is a Cinemaware game converted from the Macintosh original and now available for the Amiga. This fantasy drops you off in Chicago right after Al Capone's imprisonment has left the town wide open for a gangster like you to take over. It combines character interaction with strategy and some arcade sequences. Most of the time you'll see your character, Pinky, talking with one of your gang's members, a crooked politician or someone else.

Cartoon-style balloons materialize over their heads as they talk (but no voice synthesis, thankfully). Often several balloons appear, displaying Pinky's thoughts as he mulls over his options. By clicking on one, you can determine the course of the story. You also get to direct your gang's financial operations, vary your strategy for taking over each of the four parts of town, and decide whether to do the latter with violence or crooked politicians.

With so many alternatives, you'll find at least three completely different ways to become King of Chicago. The main drawback is that you can't save a game in progress. But with such lush graphics and mood-setting music, most people won't mind playing it from the start enough times to finally win. Graphics are brilliant, and this is the most cinematic of Cinemaware's productions. It's a two-disk program, however, that accesses the second one so frequently that the company recommends at least two drives or a hard disk or a one meg system (so you can move the graphics from disk two onto a RAM disk or hard disk to speed access).

What's Up, Doc?

Available for the 64 and 128 as well as the Amiga, Infocom's *Sherlock: The Riddle of the Crown Jewels* presents a mystery with a twist. Instead of assuming the role of Sherlock, you play his assistant, Dr. Watson. It includes a map of London, which makes it easier to find sights such as Westminster Abbey and Buckingham Palace while you're tracking down Moriarty, the villain who stole the jewels. If you don't find them in time, the Queen's Golden Jubilee Festivities will be ruined—and you'll lose the game, of course. This all-text game is considerably difficult and will require lots of mapping. But it has built-in InvisiClues, so novices should not be intimidated. The Amiga version also has sound effects.

More Clues

Since all games don't have built-in clues, here are a few from the most recent issue of *QuestBusters*. *Faery Tale Adventure:* You need five statues to complete the game. They are found in Seahold, Hempsath's Tomb, the Crystal Palace on the Isle of Sorcery, the forest of Grimwood and King Mar's Castle (from a Priest). A safe way to obtain keys is to wait just inside the fence in the graveyard. When skeletons approach, you can attack through the fence but they can't attack you—and skeletons always carry lots of keys.

Beyond Zork: To get the Crocodile's Tear, attack the baby hungus to make the mother follow you to the idol. When the mother is on the bottom, get the jewel. Inside the Idol, turn on the lantern. Squeeze the moss, then point the Thing of Eversion at the wall. Find the mother and point the Thing of Eversion at her to get the jewel. Then point the Thing of Levitation at the baby. ■

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noyed by the blank display during these updates.

The manual includes a tutorial which novice CAD users will appreciate. Experienced users may want to skip the lesson chapters and go directly to the ten appendices which include command summary, library figures, printer setup, key definitions and scaled units as well as one which gives tips and hints on getting the most out of the program. I found the manual complete and easy to understand yet not so elementary that the experienced CAD user couldn't learn from it.

The original *Home Designer* came on a disk which could be copied but required a hardware key to operate. The key requirement has been dropped, and the current version is entirely free of copy protection. My hat goes off to James Kendall and the people at Briwall who recognize that good productivity programs are too valuable to be without. I think anyone who makes a living drafting blueprints will be impressed with all the sensible, powerful and detailed features included in this modestly prices CAD program. *Home Designer* is a powerful tool worth using and worth paying for. ■

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do more than manage numbers; you can visually simulate the effects of your formulas.

Descartes! (named after the French philosopher and mathematician) graphs mathematical relationships which can be saved as IFF files (compatible with most paint programs).

Math-related software for the Amiga lets you do more than manage numbers; you can visually simulate the effects of your formulas.

The program allows the user to input math equations (simple and complex) after which it graphs the results. For me at least, this program cuts through the murky fog with which I always struggled when studying calculus. The program's built-in functions include all those things which thrill mathematicians (and dumbfound the rest of us) like log, sine, arc sine, tangent, square root, linear and logarithmic grids.

Doug's Math Aquarium, using similar tools, lets the user graph lengthy two- and three-dimensional equations using both Boolean and trigonometric functions. The graphs it creates are displayed as either solid or wire frame images and can be viewed from any perspective. Using math-created fractal images, this one crosses the line between the study of math and the principles of art.

Analytic Art accepts the fact that the line between science and art is often blurred and proceeds to make math beautiful. In fact, today the line which divides math and geography is also beginning to blur. This truth first became obvious when Benoit Mandelbrot introduced his concept of fractal geometry. Using graphic displays of math equations he was able to simulate surface contours very similar to those which occur in nature. *Analytic Art* brings that study of fractal objects to the Amiga. The program lets the user create, plot, display and magnify Mandelbrot-type images—all created by math formulas. To enhance the display, the program will even create two separate views, so the graphs can be viewed as a two-dimensional plane or in true 3D. You don't have to be a mathematician to use and enjoy *Analytic Art;* all that is required is an inquisitive mind.

While *Math-Amation* takes a more traditional approach to math, it could never be described as a simple product. The options this program brings to the math community are extensive, powerful and complex, yet easy to handle. The program includes several programmable scientific and matrix calculators (graphically displayed) which can interpret extensive formulas. Plus these calculators can handle technical measurements and constants (like fuel consumption, thermal diffusion, velocity, etc.), for those interested in Physics. The results of these calculations can then be displayed as numbers or charted as scaled pies, bar charts or plots. For the serious math student, teacher or scientist, *Math-Amation* is a godsend. With simple mouse-issued commands, they can make the program calculate results, convert units of measurement, solve algebraic formulas, plot geometric coordinates, etc.

For me, these packages are amazing curiosities which are fun to play with because they create interesting (even beautiful) patterns. But I must confess, beyond the visual satisfaction of their display I have little interest in them (for me, Log will always be something you stumble over rather than equate with). But (and that's a major but) in the hands of a mathematician these programs become powerful tools for unlocking the mysteries and principles of math.

Beyond The Sciences

Some software is difficult to label, and the *New Technology Coloring Book* is one such program. As the title suggests, the program is actually a disk-based collection of science-related graphics which includes views of the solar system, molecular makeup of the human body, nuclear reactors and topology. The idea here is to allow the user to explore the makeup of a subject (graphic display) by separating key elements by color. Using this technique, the user can examine the different thermal layers of the human hand or the orbital paths of the moons of Saturn. I found the back cover of this package a little misleading when it suggested you could "place yourself at the controls of the space shuttle." While you can examine the simple structure of the shuttle, the program does not simulate the flight of the craft or allow you to do anything more than study it. Thus, the program should be viewed as a spark which could ignite a student's interest in the sciences, not as a tool for exploration.

And now the Amiga is helping turn the wheels which drive research, exploration, fact collecting—the never-ending knowledge-finding cycle.

The Discovery series is a set of strictly educational programs. I mention them here because the series covers math, geography and science. The main program is disguised as a game in which the student explores a spaceship by unlocking computer-activated doors. Using animated prompts and a synthesized voice, the game requires the student to answer questions related to the field of study selected at the beginning of the game. Because Micro-Illusions is supporting the program with expansion disks, there appears to be no limit to what science-related (or other) fields the student can study. Before you invest in the program, you should be aware that this is a testing, not teaching aid. The student must learn about the subject the program queries from other traditional sources. As such an aid, however, it is excellent. If you have young, would-be scientists around your house, this program can spark their interest in learning.

Users of the *KindWords* word processor might be interested to know they can purchase a separate template disk which lets them type scientific and mathmatical symbols directly into their documents. These templates are activated by selecting the symbols feature from the Font menu. Once loaded, the keyboard responds to toggles between symbols defined by the template and normal letters. Thus, authors writing about or describing a science-related project could quickly and easily include universally recognized symbols not available on most keyboards. Anyone who has ever wrestled with the difficulty of either penciling in or pasting down technical/scientific symbols into a document will welcome *KindWords'* easy solution with open arms.

Fearless Frontiers

All scientific studies pivot on two questions, "what if" and "why," and the Amiga excels in its ability to simulate environments perfect for exploring and answering those questions. Without question, the present release of edu-science software displays the Amiga's ability to

simulate realistic environments for scientific examinations, testing and exploration. But what comes next depends upon the public's demand for science-related software and the efforts of software developers to satisfy them.

But a mere desire for software doesn't automatically translate into a product. The demands upon the software developer are enormous. The programmer must not only be versed in the Amiga's language but also be either an expert in the field in which his software is rooted or work in tandem with experts in that field. Thus far, the software available has been for the more popular sciences: Astronomy, Geography, Math and Medicine. With them you can begin to explore the stars, the earth, math relations and the human body. But that is only the beginning of what should follow. Hopefully the future will see entries in the fields of Zoology, Botany, Geology and specific physics studies.

True scientists try to discover facts which can be used to improve our lives and the world we live in. Unfortunately, the side effects of those discoveries do not manifest themselves until years later. For instance: No one in the 1940-50's suspected that the use of asbestos (a wonder material for fireproofing ships) would prove to be a death sentence to those who had worked with it 30 years later. Without any simple way to simulate all the possibilities of a situation, learning and exploration had to be done with physical experiments and time—neither of which the war effort could spare. As a result, the dilemma of removing the misapplied asbestos is something many of us must cope with today. School boards, offices and factory owners working where the stuff was used must try to find a safe way to remove the substance while researchers search for a cure for the physical damage done to asbestos workers' lungs. Perhaps in the future, using applied science and simulated software, we can avoid similar, deadly mistakes. With the aid of a computer (and accurate data) experiments can now be simulated, problems targeted and the long-term consequences determined by using time-compressing software.

Maybe you or I will never discover any earth-shaking truths using our Amiga, but if it sparks our curiosity, expands our vision or just satisfies that human desire to know, the software developers have done their job. The list of science related software presented here by no means includes all that is available for the Amiga user. Even as I finished this article, announcements of new products, like Felsina Software's *Digi-Weather* were being released (it is supposed to let you collect weather data via modem and create weather maps). Each day seems to see new science-related programs released in the public domain arena. The dilemma facing the Amiga user who needs software for scientific projects isn't finding a program, but choosing from those available and keeping track of new releases. Its a good time to be alive if you possess a child's curiosity or a scientist's need to know. ■

Science Software

Analytic Art
(Math-generated 3D graphics—$64.35)
Crystal Rose Software
109 S. Los Robles
Pasadena, CA 91101-2417

Deluxe Maps
($25.00)
Maps Computer Arts
P.O. Box 529
Opp, AL 36467

Descartes!
(Math relation graphing—$34.95)
Mindware International
110 Dunlop Street
Barrie, Ontario L4M 5R3

Discovery
(Explore/study science/space—$39.95)
MicroIllusions
P.O. Box 3475
Granada Hills, CA 91344

Doug's Math Aquarium
(Mathematical formula tracer—$79.95)
Seven Seas Software
P.O. Box 411
Port Townsend, WA 98368

Forms In Flight
(Dimensional relationships—$79.00)
Micro Magic
261 Hamilton Avenue
Palo Alto, CA 94301

Galileo V2.0
(Astronomy—$99.95)
Infinity Software
1331 61st Street
Emeryville, CA 94608

Great States II
(U.S. Geography—$39.95)
Designing Minds, Inc.
(Learners Image)
P.O. Box 3667
Logan, UT 84321

The Halley Project
(Explore the solar system—$9.95)
Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062

KindWords
(Word Processor—$99.95)
Scientific/Math Fonts
(Technical Symbols—$24.95)
The Disc Company
3135 South State Street
Ann Arbor, MI 48108

Math-Amation
(Modular math and science processor—$99.95)
Progressive Peripherals & Software, Inc.
464 Kalamath Street
Denver, CO 80204

New Technology Coloring Book
(Exploring with color—$19.95)
The Software Toolworks
(Electronic Arts)
9713 Santa Monica Blvd.
Beverly Hills, CA 90210

People Meter
(Stress detector—$59.95)
Aminetics
P.O. Box 982-205
Whittier, CA 90608

PIXmate
(Image manipulation and enhancement—$69.95)
Progressive Peripherals & Software, Inc.
464 Kalamath Street
Denver, CO 80204

The Planetarium
(Astronomy—$69.95)
MicroIllusions
P.O. Box 3475
Granada Hills, CA 91344

Sculpt-3D
(Dimensional Relationships—$99.95)
Byte By Byte
Arboretum Plaza II
9442 Capitol of Texas Hwy. N.
Suite 150
Austin, TX 78759

The Surgeon
(Internal medicine—$49.95)
ISM, Inc.
P.O. Box 247
Phoenix, MD 21131

VideoScape 3D
(Geometric and fractal shapes—$199.95)
Aegis Development
2115 Pico Blvd.
Santa Monica, CA 90405

Public Domain:

Amigazer
(Astronomy)
Q-Link

HeartbeatNode
(Medical)
PeopleLink

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Sprites—You Gotta Have 'Em

To avoid cliche-sprites, here's an exercise that might help: study sprites from commercial games. You could purchase a program that will grab sprites and print them out. Short of that, simply look closely at the ones that strike you as creative. Also, you can study the sprites of other magazine games you have typed in and analyze them with any good sprite editor.

The following tips are for the designing of sprites:

- Use single-color sprites rather than multi-color. If you really want more than one color, design one sprite on top of another. Why? Because they're less jagged.
- Character sprites benefit from having one prominent feature: a large nose, sunglasses, a huge hat, etc. (Technique: exaggeration.)
- However, sometimes less is more. Try tiny, one-pixel eyes, or a two-pixel mouth. You'll be surprised at the results. (Technique: understatement.)
- Forget realism. Give your character sprites one main character trait like the seven dwarfs: dopey-ness, grumpy-ness, etc. Then strive for that effect.
- Get an art book and study the effect of shadows and highlights. It'll do wonders for your sprite artistry.
- Use double-tall sprites, the top one a head, the bottom a body. It isn't proportional but it works.
- Animate if possible. And I don't mean simply moving the sprite around the screen. Make it walk, flap its wings, blink its eyes, or swing a bat. It's not hard: just a poke or two is all it takes. The user's guide to your computer explains how this is done.

Finally, here are a few tips on how to condense your sprite data:

- In your DATA statements, omit 0 bytes. A line that looks like this:

```
DATA 0,0,0,0,0,0,0,0
```

could be reduced to:

```
DATA ,,,,,,,
```

This saves seven bytes. Not much, but it can add up.
- Combine DATA lines. Every line number added gobbles up space. So instead of two 8-byte lines, have one 16-byter. However, keep your reader/typist in mind: lines too long are difficult to type without errors.
- Clear all sprites with a zero-fill at the top of the program with a line like this (for the 64):

```
FORT=0 TO 512:POKE
12288+T,0:NEXT
```

(For the 128 change the 12288 to 3584.) Now if you have sprites that occupy only part of the grid, design them at the top of the grid and only those rows with bits set need to be part of your DATA.
- Often when animating sprites, several sprite shapes will contain many lines of the same data. Share that data by reading it in only once via the FOR/NEXT loop then POKE the contrary bytes.
- With the 128 you can often use the graphics commands (like CYCLE, DRAW, etc.) to draw an object on the screen, then SSHAPE it to save the icon, and then finally SPRSAV is to a sprite shape. If you don't want the user to see this happening, use the FAST command to hide (and speed up) the action. ■

Gold Mine

Continued from page 16

Crusade in Europe: In scenario 5 or scenario 1, you can easily destroy the Allied forces. Order your infantry to defend in the hedgerow below the town of St. Lo. Defend left and right as much as possible. While the infantry is doing this, order your panzers to attack from the east at Caen. If you keep attacking, you will probably destroy about 15 divisions and recapture three of the invasion beaches.
John Lee
Long Island City, NY

Defender of the Crown: The way you begin tells if you are going to win or not. To begin well, don't buy more soldiers at the start of the game. Transfer one or two soldiers, and move your small army around the empty countries until all are taken. Return to your Garrison, waiting until you have enough money for at least 40 soldiers and a catapult.

Now attack the castle at the far right, where you will have a 50-50 chance of winning the battle. If you win, the rest of the game is a breeze.
Daron Rainer
Plano, TX

Destroyer: If you need to improve your skill at shooting down Zeroes, pick the mission SCREEN. Set a course heading SSE and wait on the bridge for radar to report "planes nearby." Call General Quarters and go to the anti-aircraft guns. The gun that you are on tends to take less damage.

To practice using the torpedoes and main guns, pick CONVOY ESCORT. Head north slowly and go to the observation deck. If you look south, you'll see four slow-moving ships, and you should be able to sink a few of them if you're a decent shot. Don't come to all stop, because the convoy will keep moving and you'll be in a fatal collision.
Scott Stephan
Address Unknown

Elite: If you own this popular game, here's an encyclopedia of help for you.

The first rule is to save the game every time you land. Go to LAVE and buy two tons of narcotics (49.8 credits), then head for REORTE (4.4 light years). If the sell price is below 80 credits, start the game over again. Once docked, sell your cargo and buy slaves. Buy fuel, save the game, and head for REALES (6.8 LY). Ignore all enemy ships until you're equipped to fight (you are better off to restart if challenged).

If you want to fight, use your missiles and laser; if it's too tough, start over again. (That's why we save the game at all stations). If a single ship appears, it is the police. Pirates work mostly in bunches. The best tactic is to zap the ship far out.

You'll be successful in one of your runs, even though you may have to start over several times. Have patience.

Trading: Only trade in narcotics, computers, slaves, liquor and furs, and only trade between industrial and agricultural planets.

Check your market price as soon as possible. If the price isn't good enough, hyperspace back to the planet of your launch. If

the price still isn't right, hyperspace back and forth again—the price will have changed. Do this until you get the right price to make a good profit.

Try to find planets less than one light year apart. It saves fuel, and you can always go to hyperspace when in trouble.

If you can land on REALES or ZAZOER you have it made. ZAZOER is an agricultural planet good for slaves, liquor and furs, while REALES is industrial with good buys on narcotics and computers. The two planets are only 0.8 LY apart, and by shuttling back and forth between the two, you build your credits and buy equipment for this phase and beyond. Buy narcotics for 60 credits at REALES, sell for 80 at ZAZOER.

Equipment: After your first successful deal, buy a larger cargo bay (20 tons to 35 tons). Next buy a beam laser; pirates are always waiting, and the pulse laser just isn't good enough to fight them off. A military laser is good, but not much better than a beam laser; you need it in advanced stages of the game. Don't waste your money on rear or side guns, as they are useless.

The ECM system is a must if you want to stay alive against enemy missiles. Next, an extra energy unit will make your carrier dangerous. A docking computer is very nice, since it gives you time to plan your next move.

Docking: I shut my hyperspace off when the landing planet appears. If you don't have the docking computer, try this: The space station's landing bay always faces the planet. Approach the planet after the station passes under you; you'll see it in your rear view. Go a ways and loop back 180 degrees until you see the station in front of you. When you see the approach bay, line it up in your gunsight. Just before you enter, reduce your speed to dead slow.

Don't worry about outgoing ships, as they try to avoid you even if you bump. Remember—practice makes perfect.

Fighting: REALES has all the equipment you need to become a "Fighter Trader," but don't waste money buying unneeded equipment. Watch your fuel, since you'll need it for hyperspace action. When pirates appear, hyperspace back to the planet and recharge your energy units.

Eventually you must fight your enemy to become an "Elite," so try combat even if it kills you. Practice, practice, practice. It takes a lot of points to become an Elite.
Bill Rhoers
Creve Coeur, MO

Flight Simulator II: Here's a good way to land if you're not too good at it yet. Go to 4000 feet or higher and bring your flaps all the way out. Pull the yoke back three or four notches from the center line.

If you make sure you stay level with the horizon, the computer will do the rest. At first the plane will nose down then up, but after a couple of times it will go into a steady glide. When you've touched down, you'll hear a beep. Shut off your throttle then press the space bar to brake to a stop.
Asron Murakami
APO San Francisco, CA

Ghost Chaser: To start on level two, type FANDA on the title screen. For extra lives, type FRANK during game play.
Steve Rohatynsky
Winnipeg, Manitoba
Canada

Gunship: It's easy to destroy the enemy without sacrificing the Hellfire and the FFAR missiles. When the enemy appears on the TADS system, wait until he closes to about 0.5 km, then fire the 30 mm Chain Gun. He should be destroyed after a few hits.
Eric Chan
Dallas, TX

Hardball: The computer is a very dumb opponent in this game. He chases bad pitches and makes slow people try to steal second base, especially on the first pitch.

You can get triples and inside the park home runs if, after hitting the ball past the third baseman and reaching first, you *immediately* jump for second. When the fielder tries to throw you out at second, you not only have time for a coffee break, but you can also get to second and third, and even home plate if your runner is Jose or Darien.

With two balls on the batter, the computer usually throws a strike down the middle.

With a non-power hitter at bat, swing high. The ball will go into the air and come down rolling toward a fielder. The batter will have enough time to reach first base.

When in the field, always throw to the nearest base. If you don't, a runner will often get an extra base.
Unknown Contributor

Infiltrator: On mission two, before you plant the explosives in the weapons lab, drop a gas grenade and search the large file cabinet. You'll find an invisibility pill which will be useful in rescuing Dr. Phineas Gump.
Matthew Nelson
Los Angeles, CA

Jet: For something neat to look at, set your *Jet* simulator to the F-18 target strike mode, with the difficulty selector at zero. Take off and head for an enemy ship. As you approach, gently land on the water (remember, this is difficulty level zero).

When you come to the ship, just taxi into the hull. It just proves what those Soviet ships are made of.
Jiles McCoy
Greenville, AL

Kickman: On round one, pop every balloon except the last one. Keep kicking it, and you'll get some pretty high scores.
David Oh
New York, NY

Labyrinth: If you think there's only one combination of words to defeat Jareth in The Final Confrontation, don't be afraid to experiment. Just for fun, try all nine combinations. To save time, when you're asked to press the space bar to start the game, simply turn your computer off then on, then reload the game. *Labyrinth's* automatic save feature will let you easily return to that screen.

Don't wander about too far on the final screen—you are not an owl!
Jay Spagnolo
West Warwick, RI

Legacy of the Ancients: When gambling in Flip-Flop, try to get as much as you can (maximum 500 gold), then every time you win, Quit, then Speak again. This will sometimes prevent the guards from attacking you because you've won too much.

Upon entering the Fortress, be observant and don't panic. There are ways to get out! The five minute timer is false. It helps to stock up on healing herbs before you enter.

Before entering a dungeon, stock up on Magic Bolts, Lightning spells, and as many healing herbs as you can buy. Always Hold the healing herbs, so you can easily Use them when you need them.

When you're low on coins for the exhibits in the museum, the merchants at Isle City are very generous. But overall, just try to be patient.

Paul Sucgang
Los Angeles, CA

Legacy of the Ancients: When in the dungeons on Tarmalon, use magic spells to battle the tougher beasts: the Giant Slug (eats armor), the Knuckles (destroys weapons) and the Dangler (drains endurance). Use Magic Flames for the first four levels, and Firebolts for levels 5-9.

Remember to save your game every level or two. Be sure to save it at the bottom, so if you get killed trying to leave you won't have to return back when restarting. This will also help you gain more treasure, since it will be replaced if you end and restart the game. It also replaces traps, so be sure to Examine for them!

Brian Proefrock
Port Crane, NY

Miner 2049'er: For any number of lives N (from 0 to 255), enter this after loading the game:

```
POKE 33127,N <RETURN>
SYS 64738
```

Juan J. Rodriguez
Abington, PA

Mule: In a two-player game at tournament level, you and a friend can strip money from the computer players. If the price of Crystite is low and the computer players are rich, they are likely to bid for it. If you have any Crystite, become a seller and have your friend become a buyer. Get your friend to bid up to about $400, then have him move back down. When he starts moving, move down with him and sell to the other players, who will be bidding about $300.

Quoc Nguyen
Tacoma, WA

One-On-One: For a spectacular dunk, run toward the basket, and as you get there very quickly tap the fire button twice in succession. If done correctly, you'll get a crowd-pleasing 360 jam.

When playing against a human or electronic opponent, position yourself underneath the basket. If he shoots from outside, you can block his shot by jumping up just as the ball gets to the front of the rim. The ref will never call goaltending.

Play good defense on the shooter—when he shoots, don't let him get by you. Stay in front of him until the ball passes the free throw line; as soon as it passes, run towards it and you're wide open for a layup.

Eric DePriest
Marshall, AR

Pitstop II: If you're losing and need a little edge, try holding your fire button in. You'll be amazed to see yourself taking the turns a little faster.

Jeff Ness
Spring Grove, PA

Raid on Bungeling Bay: If you run out of bombs, you can steal some by landing on the taxi area south of the runway. This trick won't work on the island whose taxi area is north of the runway.

Greg Sullivan
Hudson, NY

Sabrewulf: Load files GMA 5, 6 and 7, then in direct mode enter the following:

```
POKE 3427,169 <RETURN>
POKE 3428,40 <RETURN>
POKE 792,99 <RETURN>
POKE 793,13 <RETURN>
SYS 3328 <RETURN>
```

To change the number of men you begin with, change the 40 in the second poke. If you make it too large, the counter rolls over.

Also, if you find two clues to the puzzle in the first section of the game, go straight on to the second section—there's a maximum of two pieces per section.

Shukri Berisha
Address Unknown

Skate or Die: In the High Jump event, wait until your third pass to tweak your air. Once you do it, the player will end his run. If you time your tweak just right, you should be pulling off airs in the 12 foot range. (The real world record is 11 feet.) Fly 'til you die!

Gabe Meline
Santa Rosa, CA

Spelunker: Get the game up and running, but when the title appears, reset the 64 and run this little program:

```
10 FOR J=18939 TO 18941:READ K:POKE J,K:NEXT
20 FOR J=18951 TO 18953:READ K:POKE J,K:NEXT
30 DATA 169,000,234,169,000,234
40 SYS 4096
```

The only way you'll lose a life now is by falling and by running out of energy! Watch out in the small pits—you won't lose a life, but you can get stuck in the bottom.

Dave Newberry
Duluth, MN

Spy vs. Spy II: When playing the computer, go to the area where the submarine is found, and place a mine, pit or other trap by the entrance. When the computer collects all the parts or needs

one more in your area, he'll come to where you set the trap. As soon as he springs it, take his missile parts and proceed to the submarine to win.
Ray Chagnon
Salem, NH

Strip Poker: When you play Mellisa, bluff $25 if she doesn't bet anything. Don't try this trick with Suzi.
James Reese
Address Unknown

Summer Games I: The disk file named WR holds all the world records. Rename this file as something else (maybe RW), and when you start the game, the computer will establish another WR file. It's an easy way to get your name into the record book.
Michael Kimsal
Mt. Clemens, MI

Tag Team: When you have your opponent out of the ring, keep doing Back Drops and Body Slams on him until there are 18 or 19 seconds left. Then jump onto the mat and wait for your opponent to be counted out.
Evan Davis
Edgeworth, New South Wales
Australia

10th Frame: If you're having trouble loading this game using the Fast version, try typing this:

LOAD "FAST50",8,1 <RETURN>

The program should load quickly, but without a title screen.
Evan Davis
Edgeworth, New South Wales
Australia

Ultima II: When you're in a city and on a horse or plane, you can replicate your mount by going to a door, getting off, and unlocking it. This will make one horse or plane where the door was, and one under you. You can use the new objects to trap guards in one building, since guards can't walk through them as you can.

This works especially well in New San Antonio, because you can trap them in the airport, prison or pool area.

To get the Ring, give at least 500 gold to the old man in New San Antonio. Then get the blessing of Father Antos, who lives on planet X at 9-9-9. Return to the old man, give him at least 500 more gold, and he'll give you the ring. The Ring lets you walk through force fields without suffering any damage. If you lose it, you can get extras by offering the old man 500 more gold.

The easiest way to get a staff or a wand is to kill a cleric or wizard in a town or village. Especially easy is the wizard near the sage in the African village in 1423 BC.
Stephen E. Mynhier
Lake City, FL

Ultima IV: When you're near the castle Britannia, insert the dungeon disk and walk around the water to the left. When the drive has to load another screen, it will display different characters, such as water, dungeon floors and bricks. Walk left on the grey dungeon floors until you find a chest. When you find it, keep pressing G and your player's number for never-ending gold! (The same trick is said to work on horses, ships and balloons.)

When your gold reaches 9999, put the Britannia disk in the drive and walk to the right, trying to retrace your steps. If you've walked too far, you may have walked into the water; use a blink or a gate spell to recover. When you get back to a regular screen, you'll be the richest person in the land.
John Gritzmacher, Jr.
Vesper, WI

Ultima IV: When you go to the blind woman for reagents and you find you've made an error by short-changing her, do not despair! Instead of losing an "eighth," just press F7 once or twice and try your multiplication again. Remember—don't press RETURN after the mistake; just stop, reach over and use F7 to correct your error.
Don Middleton
Address Unknown

Up Periscope: When you are at war and a ship is about to ram you, quickly press "Q" four or five times, then press "B" to dive. When you're 200-300 feet below the water, level out and press F5 to see the chart. Look between 1X and 4X to see your enemy. When he's out of ramming range, surface or stay at periscope depth to continue fighting with him.
Howard Weisbaum
New York, NY

Winter Games: The world records are on Track 18, Sector 13. You can change them if you have a track and sector editor. Make sure you do it on a backup, because one mistake can ruin your disk.
Mark Consentino
Lincoln Park, NJ

World Games: In Cliff Diving, don't jump until the water is at its maximum. For the most points, get as close as possible to the rock on the right side. The best score I've seen is 101.

In Sumo Wrestling, hold the joystick to the right with the button down until you grab your opponent's belt. Then keep your button depressed, and repeatedly move the joystick from the center to the bottom until you throw your opponent over your shoulder. (It may take about three tries before you get him over.) Do *not* push up, or you'll fall and your opponent will win. The best score I've seen with this method is 449.

In Bull Riding, ride Bob for the best results.
Evan Davis
Edgeworth, New South Wales
Australia

Zork I: To get rid of the Cyclops, say "Odysseus" or "Ulysses." To get the platinum bar, say "echo." Make sure that the thief steals the jewel-encrusted egg, so he will open it to reveal a clockwork canary. (If he doesn't, you can't get the canary or the brass bauble.)

The garlic is used to keep the giant bat from swooping down and picking you up.
Stephen E. Mynhier
Lake City, FL

Continued from page 53

Even though running contests existed in other Decathlon-type games, no one had done a relay yet. The relay also contained an element of strategy, where most running events are merely a test of speed.

To begin things, Brian collected a stack of photographs (from old issues of *Sports Illustrated*) and used them as models for the relay. He also tried to make the background graphics around the runners resemble the typical stadium in those pictures. Finding an easy way to monitor the stamina of the athletes was a very difficult problem to solve. At first we tried using numbers to constantly display a runner's strength. This sounded like a good idea, but the player couldn't read the figures fast enough to use the information properly. A box featuring changing colors as a means of showing the loss of energy was also eventually discarded. We finally settled on implementing an animated bar graph that changed color to reflect the loss of stamina. This method of doing things provided two visual sources of information, which could be understood at a moment's glance.

If you play the 100M Dash, try moving the joystick in a circle (instead of back and forth). You will soon discover the program recognizes diagonal movements of the stick, as well as back and forth motions.

Jermaine: Did you experience many problems gathering the flags and national anthems for the roster of nations?

Nelson: First of all, it was hard to determine which nations should be represented in the program, considering the fact it would be sold around the world. We definitely wanted Russia in the game, because everyone enjoys the rivalry that exists between our two nations. Other countries were added to the list as marketing information told us who would probably buy the product. Flag designs came from a world atlas. Epyx even used their own trademark as a flag design, and since we don't have a company song, music from the *Jumpman* program was used in place of an anthem. Books supplied the music for most of the national anthems that appear in *Summer Games*. Sheet music also came in from consulates and our sales people around the world (the West Germans were very helpful). Denmark's anthem was particularly difficult to locate, but we finally found it and completed the entire task in about a month.

Jermaine: Did Stephen Landrum contribute very much to the project?

Nelson: Landrum (who later worked on programs like *Pitstop II* and *Super Cycle*) was an interesting member of the team. He wasn't heavily into sports and generally didn't like computer adaptations of them either. His first assignment consisted of putting together the Opening Ceremonies screen. Everyone enjoyed Dennis Caswell's running man in the *Impossible Mission* program, so we stole it for the opening screen of *Summer Games*. Dennis also drew the doves, and Stephen supplied their flapping motion. The Olympic flame took three days and three tries to perfect. In short, the Opening Ceremonies Screen used about 6K of code, 10K of data and took a lot of time to perfect.

> The Olympic flame took three days and three tries to perfect.

I can't remember when Landrum started Platform Diving, but it was nearly completed by January of 1984. Stephen spent countless hours plotting things out on paper, so the computer pictures would accurately depict someone diving into a pool. The judges of the event award points solely for how vertical the diver entered the water. A total score was instantly computed and spread out over the judges (to make it look randomized). Certain sounds were also governed by the performance of the athlete. Four different splash sounds could be activated by the computer, according to the "verticalness" of the diver and what position he was in as he entered the water. By the way, the diver doesn't actually appear in the pool, because there simply wasn't enough time to do that.

Later in the year, Pole Vaulting proved to be equally challenging for the master programmer. To begin with, Landrum had to write three separate programs just to help generate data. Videotapes were also available to help him observe the vaulter as he went through the different stages of vaulting. Three pole grips were created because it seemed like a good idea at the time. Stephen used 4.00 meters, as the lowest vaulting height, just because it was a nice round number.

Randy Glover (creator of *Jumpman*) started the swimming events, but Stephen had to finish them when Randy left the company. The basic appearance of swimming was worked out by Glover (and graphics designer Erin Murphy), without the aid of photographs. Bugs in the program produced some strange visual effects. There was a time, for example, when the swimmers could actually swim through the concrete of the pool. It's also interesting to note that the scrolling effect, used in the swimming events, was done in bit map mode, while the scrolling effect found in running events was generated in character mode. These two types of events were developed using completely different routines, in different programming environments, to produce very similar scrolling effects. In conclusion, Swimming was the largest event of *Summer Games,* it used practically all available memory, and both swimming challenges were the same program (with the only difference being a parameter).

Jermaine: What happened at the Consumer Electronics Show of 1984?

Nelson: Before we went to the show, I was contacted by a group called 3-2-1 Software. They invited us to stop by their booth at the convention (to see the neat stuff they were doing with human figures in game software). We also invited them to come over and visit us. As things turned out, they saw our work on *Summer Games,* and we were surprised to see demos of what later became known as *Hesgames*. Yes, they were secretly competing with us to produce a Commodore 64 Olympic-related program (even though both parties had no idea what the other was doing until the show).

To make matters worse, the competition announced a June shipping date for their Olympic-oriented product (which was earlier than the planned release date for *Summer Games*). *Hesgames* missed its shipping date by several months, but the threat of someone beating us to the market did wonders for our morale. As I returned home from CES, it suddenly hit me that we were now in a race against a rival development team and had an Olympic time table to contend with. Extra people were immediately pulled out of other projects to help us finish *Summer Games*.

Jermaine: How did you complete *Summer Games*?

Nelson: John Leupp, Randy Glover and Steve Mudry were asked to create a minigame for the project during a six-week period. Leupp, the creator of *Robots at Dawn,* decided to construct a Skeet Shooting event. Stations, trap houses and even the targets were eventually given shadows to support the realism of the graphics. The exploding target effect was originally worked out on paper, using a series of detailed drawings. Each picture in the se-

quence displayed the target fragments progressing further and further apart. Once the pattern was determined on paper, it was fairly easy to transfer that information to the computer. As the game progressed, several notions were quickly discarded. We discussed in length, for example, the possibility of displaying the shooter standing at the various stations. It was finally decided we couldn't draw an attractive enough figure to make this idea practical. John also put a giant flamingo in the background of the event as a joke, but it wasn't used in the final version of the game either.

I already told you about how Randy Glover developed a portion of the swimming events, so it's time to talk about Steve Mudry. Steve was another Starpath employee who was absorbed into Epyx by the merger. He was looking at a project that simply didn't materialize, so we grabbed him to program one of the final events of *Summer Games*. Steve picked the Gymnastics Vault as the theme of his work. This event looked interesting from the very beginning, because it contained a stationary background with only one object moving across the screen. It takes mountains of computer pictures to animate a gymnast, but this vaulting concept reduced that number to a reasonable figure we could deal with. Steve also encountered some unusual color problems as he worked on the 64. The gymnast was easier to animate with reasonably uniform backgrounds. Gymnastics was completed on schedule and occupied approximately 48K of memory. By the way, Scott Nelson (my youngest brother) spent several months developing the program menu, tying the events together, and generating an attractive record screen for the game. If he hadn't become ill at the time, I'm sure he would have contributed even more to the project.

The last three days of work were pretty grim. You can't imagine what it was like to stay up all night programming, work the day shift, and go into a second night of work hoping to accomplish something. During the final days of the project, the packaging and instructions were ready and waiting on the program. To show you how close our schedule was, we completed the game one night, and it went into full production the next morning.

Jermaine: What inspired you to create *Summer Games II*?

Nelson: As the original *Summer Games* brainstorming sessions took place, we compiled a list of Olympic events that seemed to have a lot of promise. Naturally, two or three interesting events were left out of *Summer Games* because of memory restrictions and the lack of time to develop them. These ideas became the foundation of *Summer Games II*. Consumer feedback also convinced us there was a demand for such a product, so we started planning things out (approximately three or four months after *Summer Games* hit the market). Some of us thought the sequel to *Summer Games* should definitely have a winter sports theme. This seemed to be a great idea at the time, but we hadn't heard from our marketing people yet. They felt a winter sports game should be released in an August/September time frame (as a Fall and Christmas item). Since we were looking at an April 1985 release date, it made more sense to concentrate on a warm weather theme.

> It suddenly hit me that we were now in a race against a rival development team and had an Olympic time table to contend with.

Jermaine: Can you share a hint or two on the first two *Games* projects?

Nelson: Believe it or not, it is possible to easily get credit for vaulting over the highest bar setting. To accomplish this feat, raise the bar to the highest setting, take a low grip on the pole, and vault beneath the bar. If you want to play a good joke on one of your friends, generate a phoney record (while he's not looking) and tell him you did it on the first try. After you've had a few laughs, please tell your friend how you accomplished this feat.

The High Jump event is a good example of something that's a lot harder to produce in a microcomputer environment than anyone imagined. We always try to make each game fairly easy to compete in and a real challenge for the user, but the perspective we chose for High Jump made it difficult to play. Now I won't say we made an error selecting this event for *Summer Games II*, but I'm still not totally satisfied with the end result.

Jermaine: How was *Winter Games* developed?

Nelson: *Winter Games* had to be the most unique *Games* project to date. Even though the concept was generated in-house, the actual programming was done by Action Graphics (a group based in Detroit). *Winter Games* also had the longest development cycle of the series (from the summer of 1985 through September of 1986). There were fewer events in the program, and each of them was designed to be portable to all computer systems (where it would take less work to translate the data than ever before).

You might wonder why Epyx allowed outsiders to program one of their games. It was actually a good arrangement for everyone involved. First of all, we had seen examples of their work and knew they could do the job. Secondly, all of our development people were busy doing other things. The whole software industry was also recovering from a major decline in sales. We needed to produce as much quality product as possible (to stay competitive in the market), while Action Graphics wanted to do the work. I was the original supervisor of the project. When Matt Householder was hired, we quickly threw him to the wolves and asked him to finish things up. He can tell you more about that unusual experience.

Matt Householder was hired by Epyx to be groomed as the manager of software projects. Fate stepped in, however, and he found himself supervising the completion of Winter Games *(shortly after being hired). Matt continued to make a name for himself as the project manager of* World Games *and* California Games. *He's 33 years old, happily married, and resides in the San Francisco area. His interests include: locating and restoring bizarre "rabbit-ear" antennas, collecting portable tube radios, and performing do-it-yourself household repairs.*

Jermaine: How did you finish *Winter Games*?

Householder: I was quickly brought into the project on July 1, 1986. Now this was a strange situation for me, because the product was due to ship on September first (just two months away). Action Graphics (located just west of Chicago at the time) was working with Epyx on the project back then, so I flew out there and worked with the group for several weeks. They were very cooperative and really wanted to finish the project on time. When I returned home, I was constantly calling them up, or they were contacting me. Our phone bills must have been enormous. When all was said and done, we only missed the shipping date by a couple of weeks.

Jermaine: Who came up with the *World Games* concept?

Householder: I remember attending some brainstorming sessions shortly after the completion of *Winter Games*. These meetings were attended by most of the marketing and product development people. Bob Botch, Vice President of Marketing, was present at all of these sessions. He came up with the "World Games" title and suggested we might consider using some non-Olympic contests in the program. Epyx supported Bob's idea, because it pointed the *Games* series in a new direction. I contributed the notion of viewing the game as a very special travelogue, where the player literally traveled around the world (accepting challenges in many nations).

We also selected the list of events in a totally different manner. Everyone would sit back and concentrate on a particular country. (I'll use Mexico as an example.) Then the group discussed what they do down there, for sport, that's unique to Mexico. The obvious answer was cliff diving. We finally had to determine if a realistic cliff diving simulation could be generated on microcomputers. The answer was yes, and that was that. About a dozen events were considered for the game, while eight of them were actually used.

Jermaine: How did the project progress?

Householder: *World Games,* like *Winter Games* before it, was designed in-house and programmed by people outside of the company. Once again, I had become the project manager of a complicated operation. Epyx artists did the drawings for the game, while K-Byte programmers (based in Detroit) wrote the actual code. This was another difficult task, because I was constantly on the phone coordinating things between the two groups.

Jermaine: Why does the Continental Airlines logo appear in the events of *World Games*?

Householder: Since the basic appearance of the program was patterned after a travelogue, it seemed only natural to include some form of international transportation. We eventually struck up a deal with Continental Airlines. Epyx agreed to give them a presence in the games in return for round trip tickets to places like Disney World and Epcot Center. The tickets were then used in a consumer contest. The presence of the airplane was also a means of tying the events together. It provided a logical way for the player to get from one location to another.

Jermaine: Can you share a *World Games* story or two?

Householder: We had a lot of trouble locating Caber Toss information, because there was very little in print on the subject. I heard about Scottish games being held in California, so I contacted the promoter and discovered their Caber Toss guy was an expert. He gave me several pointers (that my books didn't mention), while revealing the proper scoring technique of the sport. I also learned that most people believe the object of the contest is to see how far you can toss the caber. Actually, your goal is to see how accurately you can throw it. Our computer athlete tosses the caber for distance, however, because it's more dramatic, and we allowed the player to make certain mistakes that activated humorous consequences (like being driven into the ground like a stake, for example). Speaking of the Caber Toss, Jeff Webb (one of our sound engineers) had a lot of trouble generating the noise of bagpipes on the 64. As you probably know, bagpipes emit an initial squeak before dramatic frequency changes take place (as the music is played). Jeff solved this unusual problem by constructing a special sound driver, which allowed that specific range of frequency sweeps to occur. I think he did an excellent job.

The team was equally entranced with the notion of featuring head-to-head competition in every challenge of the game.

The turning globe effect (that appears in every title screen of the game) was cheap to produce, cleverly done, and didn't use a lot of memory. First of all, we drew out a long rectangular map of the world. Then we slide it behind a circular opening to give it the appearance of a globe.

Jermaine: What can you tell me about the *California Games* project?

Householder: Believe it or not, my wife and I came up with the basic concept of *California Games* ourselves. Living in the San Francisco area, were used to seeing people performing stunts on bicycles and skateboards in Golden Gate Park. Whenever we go to Santa Cruz, the surfers always give us an amazing exhibition of riding the waves. We were walking around one weekend, and Candi suggested that Epyx should consider doing a program featuring skateboarding and bicycle stunts. I mentioned that surfing would also fit into the scheme of things.

So I went back to work on Monday (March 25, 1986) and wrote up a short proposal for "Rad Sports," another multi-event competition. The contests I outlined included: two skateboarding events, two BMX™ bicycling events, surfing, wind surfing, hang gliding and parachuting.

It should also be noted that the proposal mentioned opportunities for cross promotion of companies that manufacture the equipment displayed in "Rad Games" (skateboards, bikes, surfboards, etc.). Our marketing department latched on to that idea, making the *California Games* promotion the most successful one to date.

Even though the "Rad Games" proposal set things in motion, almost a year went by before the design concept would be nailed down. We started programming the events in January of 1987 and hoped to finish the project by June (the game was actually completed during the early days of July).

Jermaine: Why did you change the name of the program from "Rad Games" to *California Games*?

Householder: During the early design sessions, certain members of the group wanted to change the title of the program. They felt nobody would understand what "Rad" (short for "radical") meant. This made a lot of sense, because we needed a strong title everyone could identify with, in order to sell the product. Once again, Bob Botch came to our rescue with the name "California Games." It seems that a marketing pendulum is constantly swinging back and forth between the two coasts. When people want to make money, they usually think of the east coast. When they want to have fun, California and the west coast come to mind. This was the time when California Coolers®, dancing/singing raisins, and surfer clothing was the rage, so the name "California Games" had a lot of potential. The title also helped us to define the final list of events for the project. They included: half pipe skateboarding, the foot bag, surfing, roller skating, BMX bicycle racing and the flying disk.

Paul Vernon, one of our in-house artists, suggested doing a Hacky Sack™ event for the program. We couldn't call it that (for obvious reasons), so the name "foot bag" was substituted. The group experienced the same type of problem when someone wanted to create a Frisbee™ throwing contest (we eventually called it "flying disk"). This was also the first time Epyx had employees who could demonstrate events that were planned for a *Games* project. Paul Vernon was a Hacky Sack enthusiast, while Chuck Somerville

had been into half pipe skateboarding when it first became popular in the early 1970s. These talented individuals shared their special knowledge and acted as models, whenever we needed to take some additional photos. By the way, we didn't design the half pipe event to allow you to do aerial turns off the top of the screen. We were so amused when someone discovered this bug, we decided to leave it in as a feature. The group also did a lot of special research around here. We purchased a skateboard and rode it up and down the parking lot. I nearly broke my skull a couple of times.

On a beautiful spring day, Epyx held a *California Games* clinic (disguised as a cookout). It was great fun. Our whole company was sitting around outside (riding skateboards, throwing Frisbees, kicking the foot bag around, etc.), while the neighboring companies in our business park came over and watched. All of the employees were dressed up in outrageous California costumes that were judged for prizes, and Beach Boys music filled the air. Everyone applauded the entertainment: a young BMX bicycle freestyler and skateboarder who really knew what they were doing. For lunch, we had a typical California cookout (hot dogs, hamburgers, potato salad, chocolate chip cookies, California Coolers and assorted soft drinks). We all had a chance to let off a little steam, while videotaping the demonstrations for our artists. This is not an unusual event at Epyx. We occasionally open up the back warehouse doors, put a basketball hoop on the forklift and play a gruelling game of three-on-three basketball. I told you these stories to illustrate a point: we may work long hard hours on our game projects, but we're still ordinary people who know how to have a good time.

With California Games *behind them, Epyx considered developing two Olympic-style programs (patterned after the Winter and Summer Games) that would be licensed with and approved by the United States Olympic Committee (USOC). Several individuals will comment on this subject to give you a better understanding of how the USOC operates.*

Jermaine: How did Epyx acquire the license with the U.S. Olympic Committee?

France Marlin (Contract Administrator at Epyx): Initially Diane Drosnes approached Michael Stone, the president of Hamilton Projects Inc., the licensing services consultant to the U.S. Olympic Committee. Michael Stone contacted Hamilton's on-site representative at the USOC, Ilene Kent, and negotiations began with John Krimsky, Jr., Deputy Secretary General of the Committee and Director of Development. The USOC and Hamilton were very easy to work with, and the arrangement we negotiated was mutually beneficial. When all was said and done, the final contract, over 40 pages in length, was signed in October of 1987.

> We feel the product quality is constantly improving, even though every project becomes progressively more complicated than the one before it.

Jermaine: Can you give me some basic information about the U.S. Olympic Committee and their licensing practices?

John Krimsky, Jr. (Deputy Secretary General, USOC): The USOC, chartered by Congress through the Amateur Sports Act of 1978, is charged with the responsibility of raising money for the U.S. Olympic Team. This is done primarily through corporate sponsorship, licensing agreements and private donations.

These funds are vitally necessary, because the U.S. is one of only a few Olympic nations that does not support its Team through sustained federal funding. Sponsors contribute a fee and usually some product, for the privilege of calling themselves a Sponsor and using our prized logo on their advertising and promotion. Licensees use the logo on their products and give us a royalty on the sales of the merchandise which is used to train our athletes and send them to the Games.

When all is said and done, we expect to have over 45 corporate sponsors, including nine who have purchased worldwide marketing rights in their respective categories, and over 30 licensees in such diverse categories as t-shirts, pins, hats, precious metal medallions, and, of course, computer games. We also solicit donations from the general public through a rather extensive Direct Mail Program.

Ilene Kent (Manager, Olympic Licensing, Hamilton Projects): It's my job to license and administer the symbols of the U.S. Olympic Committee and the 1988 U.S. Olympic Team in our country. Under the International Olympic Committee charter, the USOC does not have the right to license the logos of the Winter and Summer Olympic Games, without the permission of the Local Organizing Committees (equivalent to the LAOOC in 1984). For 1988, it's the Calgary Olympic Organizing Committee (OCO) and the Seoul Local Olympic Organizing Committee (SLOOC). Every four years, legal ownership of the terms "Winter Olympics" and "Summer Olympics," and their respective logos, is transferred to these Local Organizing Committees. While this causes some confusion at first among licensees, once the rules are explained and the licensees understand that it is not the *USOC* making the rules and restrictions, then the licensees are more than cooperative.

It's interesting to note that OCO and SLOOC are treated like a National Olympic Committee, meaning that their licensees are not permitted to sell products bearing the Winter and Summer Olympic logos in the United States without the express written consent of the United States Olympic Committee. The U.S. Olympic Committee is taking steps to facilitate the presence of Summer Olympic-identified merchandise in the United States.

The USOC has the exclusive right to authorize the use of two distinctive logos: (1) the USA/five-ring design and (2) the U.S. Olympic Committee symbol, consisting of the first design surrounded by the words "U.S. Olympic Committee" and encircled by a wreath. Most licensing arrangements terminate at the conclusion of the quadrennium (the four-year period commencing the year immediately following the Games and concluding at the end of the year in which the Games are held). However, some agreements such as Epyx have been extended through 1989, part of a master plan to create an Olympic "brand." Once a contract is signed, the licensee is free to use either logo mentioned above for use directly on the product. As Epyx knows all too well, all product and collateral material must first be submitted for approval. Again, it is important to note that royalties are paid on the sale of officially-licensed merchandise, so the consumer can feel as if he is actually contributing to the team by purchasing the licensed Epyx product.

Jermaine: Are there many restrictions concerning how the U.S. Olympic Committee's logos can be used on a package?

Kent: The answer to that, as Epyx is all too aware, is yes. The USOC must maintain strict guidelines to protect the integrity of the Olympic marks and, hence, the

entire licensing program. The USOC Graphic Standards Manual clearly states how the "USA" and five-ring logos can be used on a product, and again, *all* printed matter must be submitted to the Committee for review. Some examples of the guidelines: the Olympic rings may never appear alone—they must always be accompanied by "USA". Proportions of the "USA" and rings are always set; you can't make one item more prominent than the other. In terms of color, the "USA" symbol can either be all red, black or blue, but they must all be the same color. The five rings can also be one color (the same ones available for the "USA" design), or the five designated colors in proper order.

An interesting bit of trivia: At least one of the ring colors (blue, yellow, black, green and red) appears in the flag of every Olympic nation. Another interesting bit of trivia: The five rings are the second most recognizable logo in the world, next to that of Coca-Cola®.

Jermaine: How do you determine the price of a license?

Kent: We base it on the marketability of the product, what we expect the demand to be, the company's reputation in the marketplace—to name just a few criteria. Licenses are negotiated to include a royalty rate—a percentage of sales that is "given back" to the Committee. This rate averages 10% of the wholesale value of the product in question.

Jermaine: What was it like to work with a company like Epyx?

Kent: First of all, their management is incredible. When I visited the company in October, everyone was dressed up to celebrate Halloween. You could really feel the electricity in the air. There is a good working environment out there, and everyone is allowed to do his or her own thing. I also got the impression that every employee at Epyx was equally interested in raising money for our athletes. It's great to deal with a company that really wants to be a part of the Olympic family, and that positive attitude is evident in their work.

Jermaine: Why did Epyx want to obtain a license from the U.S. Olympic Committee?

Robert Lindsey (Director of Creative Development at Epyx): We feel that the U.S. Olympic Team and Epyx have traditionally gone hand-in-hand. Now we have the opportunity to produce two authentic Olympic programs and simultaneously support the 1988 U.S. Olympic Team. After all, we're talking about the best amateur athletes in our country. Everyone should be proud of these dedicated individuals and willing to support them because they're representing us at the Games. I sincerely hope our donation will help the U.S. Olympic Team of 1988 and future Teams down the road.

Jermaine: Did you have ideas for *The Games: Winter Edition* that simply didn't work out?

Lindsey: We originally wanted to create an ice dancing event, where pairs of skaters would perform together on the screen. Unfortunately, the Commodore 64's hardware limitations made it impossible to obtain the level of animation and interaction we needed, so Epyx did figure skating instead (with a single skater). It still may be possible to resurrect that idea when we program the Amiga version of the game.

Jermaine: Can you share some information on the making of the game?

Lindsey: We started programming the first bits of code in mid September of 1987, and the product was shipped late in February of 1988. Despite the efforts of the USOC, the Calgary Olympic Committee would not release advance information about the opening and closing ceremonies of the Calgary Winter Games. When all was said and done, the group had to make a number of predictions that weren't always correct. I imagine it will be even tougher to gather information about the Summer Olympic Games (being held in Seoul, Korea).

During the *California Games* project, Epyx had access to talented individuals who could demonstrate several activities they wanted to put in the program. *The Games: Winter Edition* also had its share of special people, who contributed to the design of certain events. Chris Cabral (a high school student at Concord, California) is a junior national luge champion. He really helped us capture the look and feel of luge competition in our microcomputer game. Cathy Gage was a member of our telemarketing staff, who once tried out for the U.S. Figure Skating Team. Unfortunately, Cathy didn't make it, but her knowledge of the subject made the figure skating event a true simulation of the sport.

We're always looking for new ways to excite the consumer and give him new experiences. When the team was working on the luge event, someone suggested we might create a spectacular crash scene (where the luger flies out of the trough into space). This sounded like a great idea, but Ilene Kent (from the USOC) wouldn't allow it in the program because lugers don't crash. They may spill over in the trough, but that's about it. Chris Cabral supported her claim, and the event was depicted appropriately.

Once the project was finished, Epyx sent the entire development team up to Mammoth Mountain for a ski weekend. Everyone needed to get away for a few days, so the group could come back here on Monday and get started on *The Games: Summer Edition*. After the ski weekend, a member of the team commented, "Summer Olympics? That sounds like a trip to Hawaii to me, Bob." I hope he was only kidding.

When all was said and done, the United States Olympic Comittee found only three problems with the program, all of which were corrected in under an hour.

Jermaine: Can you give me a sneak preview of *The Games: Summer Edition*?

Lindsey: These events are scheduled for that particular program: pole vaulting, the uneven parallel bars, velodrome cycling, the hammer throw, springboard diving, 4×40 hurdles, archery and the rings. Velodrome cycling (in case you've never heard of it) is bicycle racing around a huge sloped track. It's not unusual for participants in this sport to reach speeds of 60-80 mph. The group already has plans to visit a track of this nature in San Jose. We're also spending a lot of time at Stanford University, talking with the gymnasts over there. Peter Englebrite is the project manager of *The Games: Summer Edition,* and it promises to be an incredible program later this summer (it's scheduled to ship in July).

Jermaine: Once *The Games: Summer Edition* is completed, will the *Games* series end?

Lindsey: Are you kidding? We're having too much fun doing these programs. Several concepts are currently being discussed, but no commitments have been made yet.

To wrap things up, I wish to thank Epyx, the U.S. Olympic Committee, Alonzo Babers and Noreen Lovoi (PR Manager at Epyx) for making this story possible. If any Summer Olympic athletes are reading this feature, I wish you the best of luck in Korea. C

This article is authorized by the U.S. Olympic Committee and Epyx.

Continued from page 14

ML was difficult, strange and unusual to us self-taught BASIC experts, but with practice and perseverance we learned to make it work.

One of the most popular techniques, still used widely today, was to combine BASIC programs and short machine language routines. This kept the simplicity of self-documenting easily-modifiable BASIC, while adding the speed and transparency of machine language.

Pretty soon assembler programs became available, making machine language much easier to create, modify and document for the enlightenment of others. Those with the patience for such things wrote wonderfully powerful programs, and those without it used them. The programs got better and better, increasingly being produced by machine language specialists.

And slowly but surely, the need to program diminished. One day, no one knows exactly when, the commercial programs became so good and so widely available that people could use them exclusively, never having to learn to program.

That's the situation today, and I don't know if it's better or worse. I do know that computerists who can't program are missing one of the most rewarding activities in computing. But I also know that the commercially-available programs—the games, the word processors and all the other miracles—are much better than anything one person is likely to write himself.

Louis F. Sander

Why you should learn BASIC programming: As you saw in the reminiscence above, and as you know from your own experience, you can get plenty of use out of your computer if you don't know a PRINT statement from a FOR . . . NEXT loop. But to live computer life to the fullest, you have to learn to program.

For most of us, that means learning to program in BASIC. After all, it comes free with your machine, and it's the most widely-spoken programming language in the world.

If you know how to program in BASIC, you're among the computer elite. Of course there are more powerful languages, and in the circles that use them BASIC is often looked down on, but think a little further. Of all the people using computers, how many of them know how to program? Not very many at all. So the lowliest BASIC programmer stands head and shoulders above the crowd. Interesting position, isn't it?

Not only does learning BASIC make you a programmer, but it pays other dividends as well.

Once you know how to program, you can make your computer do things that your commercial programs cannot. It's like being a do-it-yourself carpenter—if you need a shelf or a storage shed, you can make it with your own two hands. And if you need one that's not available in stores, you can fabricate it to your unique requirements. So when your commercial software can't quite do what you want, there's a good chance you can write something that can.

Even if you never dabble in do-it-yourself programming, your knowledge of BASIC empowers you in working with commercial programs. In my own situation, for example, knowing BASIC helps me get the most out of at least seven commercial programs: the Microsoft *Word* word processor, the *Superbase* and *Paradox* databases, the *Multiplan* and *Lotus* spreadsheets, the *Bitcom* communications package, and the MS-DOS operating system.

Each of those programs includes its own small programming language, put there so users can customize them to their own needs. Each of those languages has BASIC-like features that would be very difficult for anyone who couldn't program on his or her own.

Because I know Commodore BASIC, I'm better with *Lotus 1-2-3*. Wow.

Louis F. Sander

How to learn BASIC: Here are several time-proven tips on learning to program in BASIC. If you follow them, your journey to mastery will be shortened and made more pleasant:

1. Don't think BASIC is complicated. The BASIC on the 64 has under 80 key words, and half of them are very seldom used. The 128's BASIC 7.0 has only about twice as many. Compared to the vocabulary of any human language, either number is ridiculously small. Of course the key word definitions are longer and more precise than those of human words, but overall there isn't much to learn.

2. Get a reference book. The *Programmer's Reference Guide* for the 64 and the *System Guide* for the 128 have comprehensive descriptions of the syntax and action of every BASIC key word. Since programming success depends on taking advantage of these key words, you should have the complete definitions on hand.

3. Get a textbook. By this I mean a book whose purpose is to teach you programming in BASIC. While a reference book describes the key words in alphabetical order, a textbook explains them one by one, from the simplest to the most complex. It includes sample programs, and usually has quiz questions and work assignments as well. You'll find books like this in any well-stocked book store. It's nice to get one oriented toward Commodore computers, but BASIC has enough similarity from machine to machine that isn't absolutely necessary.

4. Think about taking a course. There are thousands of BASIC programming courses available, for credit and for fun. Taking one gives you the discipline to move through the learning process, and it puts you in touch with a teacher and other students with interests similar to yours. If you can't find a course taught on Commodore machines, find one on any other micro, or even on a time-shared mini or mainframe. Don't be concerned about the length of the course, even if it's a full semester long—it will be over before you know it.

If you're on Q-Link, go to the Commodore Software Showcase and download BASIC BASIC.SDA, uploaded by LouSander1. It's a self-teaching course in elementary BASIC, and it's been helping Commodore people for years.

5. Start modifying simple programs. Learning by doing is a wonderful way to learn BASIC. Find some simple programs and change them to your liking. Add on-screen instructions. Make them user friendly. Embellish the features they already have. You'll not only learn the original programmer's intent, but you'll exercise your own programming skills. The accompanying listing shows a program for adding a series of numbers; improve it as much as you can.

6. Remember a very old joke. A man is walking the unfamiliar streets of New York, trying to find the auditorium where his son's music recital is about to begin. "How do you get to Carnegie Hall?" he asks a native New Yorker. The New Yorker looks down his nose at him and says, "Practice, practice, practice." The same is true of programming—it takes hours and hours of practice, trying out new things and modifying things that you've tried. The practice is fun, the result is rewarding, and the hours of effort are worth it.

Louis F. Sander

```
100 REM ADDS NUMBERS
110 INPUT A
120 INPUT B
130 INPUT C
140 D=A+B+C
150 PRINT D
```

128 Commodore Logo: The accompanying program draws a colorful and familiar picture on your screen. Although it contains a lot of numbers, there's nothing mysterious about them. They're nothing more than screen locations and other parameters for the BASIC 7.0 statements used in the program.

If you have a monochrome monitor, it may be necessary to hold down RUN/STOP and hit RESTORE before running the program. That sometimes makes the red show up more clearly.
Jeff Johnson
Allensville, PA

```
10 REM 128 COMMODORE LOGO - JEFF
   JOHNSON
15 GRAPHIC 1,1:COLOR 0,2:COLOR 1,3
20 DRAW 1,294,136 TO 197,136 TO 197,
   104 TO 260,104 TO 295,136
25 PAINT 1,198,134
30 COLOR 1,7
35 CIRCLE 1,156,100,117,97,163,17
40 CIRCLE 1,156,100,60,49,145,35
45 DRAW 1,191,8 TO 191,61
50 DRAW 1,191,139 TO 191,192
55 PAINT 1,189,9
60 DRAW 1,294,64 TO 197,64 TO 197,
   96 TO 260,96 TO 295,64
65 PAINT 1,293,65
```

128 SEQ File Reader: This may be the shortest SEQ file reader you have ever seen. The work is done by pre-existing ROM routines in the 128.
E.G. Bell
Pittsburgh, PA

```
1 REM 128 SEQ FILE READER - E.G.BELL
2 INPUT"FILENAME";F$:OPEN 0,8,0,F$+",
  S,R":SYS 41149
```

128 Mode Guard: Since the 128 offers both 40-column and 80-column display modes, plus the old standby 64 mode, it can be hard to remember just which mode a program is intended for.

The accompanying routine, designed to be used as the first few lines of a larger program, can be tailored for the mode the larger program is intended for. If you attempt to use an inappropriate mode, you'll get a warning and on-screen instructions. In some cases the program sets up the correct mode.
Gordon A. Alexander
Newington, CT

```
0 REM 128 MODE GUARD - G.A.ALEXANDER
1 SN=PEEK(215):REM SN=SCREEN;
  PM=PROGRAM: ADD TO TOP OF PRGMS
2 PM=0   :REM PM=0 FOR 128-40C;
  128 FOR128-80C;13 FOR 64:CHG TO SUIT
3 RB$=CHR$(7):IF SN=PM THEN 10
4 IF PM=13 AND SN<>13 THEN PRINT RB$;
  "[CLEAR,DOWN]64 PROG-RELOAD WHEN 64
  SCREEN APPEARS":SLEEP 5:GO 64
5 IF PM<>13 AND SN=13 THEN PRINT"
  [CLEAR,DOWN]128 PROG-SET 40/80
  BUTTON,RESET 128, RELOAD":END
6 IF PM=0 AND SN=128 THEN PRINT RB$"
  [CLEAR,DOWN]SWITCH MONITOR TO 40COL"
  :SLEEP 5:SYS 65375:GOTO 10
8 IF PM=128 AND SN=0 THEN PRINT RB$"
  [CLEAR,DOWN]SWITCH MONITOR TO 80COL"
  :SLEEP 5:SYS 65375:GOTO 10
9 GOTO 3
10 PRINT"[DOWN]START YOUR PROGRAM ON
   LINE 10"
```

64 Quick Erase: This routine puts zeros into all the 64's RAM between 2048 and 65535, then resets the computer. It can be used as an exit routine which will make sure that your program code doesn't stay behind as a target for nosy hackers.

After lines 11-70 have been executed, executing a SYS 828 will zero out all memory. Be sure to save the program before you try it. (Residing in memory itself, it will be clobbered by the SYS 828.)

```
10 REM 64 QUICK ERASE - RANJAN BOSE
11 DATA 169,000,133,251,169,008,133,
   252
12 DATA 169,000,168,145,251,200,196,
   251
13 DATA 208,249,230,252,169,250,197,
   252
14 DATA 208,238,032,226,252,096
20 FOR J=828 TO 857
30 READ K
40 CS=CS+K
50 POKE J,K
60 NEXT
70 IF CS<>5354 THEN PRINT "ERROR IN
   DATA STATEMENTS":STOP
80 PRINT"SYS828 WILL ERASE ALL
   MEMORY!"
```

For readers interested in machine language, we are providing the assembly language source code. Each line of this code contains one machine language instruction, composed of the following parts:

- The address where the instruction begins (for example, 828).
- The three-letter mnemonic for the machine language instruction itself (for example, LDA for LoaD Accumulator).
- The number or numbers on which the instruction operates.

```
828 LDA # 0
830 STA 251
832 LDA # 8
834 STA 252
836 LDA # 0
838 TAY
839 STA (251),Y
841 INY
842 CPY 251
844 BNE 839
846 INC 252
848 LDA #250
850 CMP 252
852 BNE 836
854 JSR 64738
857 RTS
```

If you know machine language, you will know the specific results of each instruction, and you can follow the listing step-by-step. More complete source code would include many comments, similar to BASIC's REMs, appended to the program lines.
Ranjan Bose
Winnipeg, Manitoba
Canada

Telecommunications tips: Try these steps to eliminate line noise that interferes with modem communications:

1. Check your phone wires and connections. Bad connections can ruin your ability to communicate. Be sure all phones are properly hung up. Shut off your computer and reseat your modem in the User Port. Remove joysticks, speed loaders and other cartridges—disabling them is not enough. If you don't have three-prong electrical outlets, use an adaptor that screws onto the outlet cover's holding screw.

2. Eliminate radio interference. Your phone wire can act as an antenna and pick up stray signals from nearby radio transmitters. The shorter the wire between your modem and the wall, the less chance of picking up radio interference. AT&T Phone Stores sell a Radio Interference Filter (Part #104236484) for under $12.

3. Get rid of crosstalk. If you ever hear other conversations in the background when using voice, such crosstalk may be fouling up your modem. Try redialing. Try calling later at night when fewer people are using the phone lines.
Bruce A. Roberts
Bronx Users Group

Amiga Update/AmigaBASIC Tutorial

Continued from page 88

```
Initialize:

  FALSE = 0 : TRUE = -1 ' Just because!
  LIBRARY "graphics.library"
  LIBRARY "dos.library"
  DECLARE FUNCTION Lock& LIBRARY
  Title$ = "AmigaBASIC .bmap Reader"
  WINDOW 1,Title$,(0,0)-(631,186),0
  Rp& = WINDOW(8)

Start:

  COLOR 1,0 : CLOSE : CLS
  PRINT "Enter library .bmap filename.  The extension ";
  PRINT "is not required."
  LINE INPUT ">> ";FileName$
  IF FileName$ = "" THEN
    CLOSE : LIBRARY CLOSE : END
  END IF
  IF UCASE$(RIGHT$(FileName$,5)) <> ".BMAP" THEN
    FileName$ = FileName$ + ".bmap"
  END IF
  FindFile FileName$
  IF NOT Okay THEN
    PRINT "File ";FileName$;" not found"
    BEEP
    Delay 2&
    GOTO Start
  END IF
  OPEN FileName$ FOR INPUT AS 1
  LINE INPUT "Output to S)creen or P)rinter : ";Ans$
  IF UCASE$(Ans$) = "P" THEN
    fPrt = TRUE
    GOTO Printer
  END IF
  CLS
  LINE(3,13)-(628,170),1,b
  LINE(4,13)-(627,170),1,b
  Length& = LOF(1)
  LOCATE 23,1 : PRINT Length&;"Bytes read.  FILE: ";
  PRINT FileName$;
  CALL Move&(Rp&,10,10) : COLOR 3,0
  PRINT "Routine Name"+SPACE$(9)+"Address"+SPACE$(4);
  PRINT "d0 d1 d2 d3 d4 d5 d6 d7   a0 a1 a2 a3 a4"
  COLOR 1,0

GetTheFile:

  WHILE NOT EOF(1)
    FOR L = 3 TO 21
    IF EOF(1) THEN
      FOR J = L TO 21
        LOCATE J,2
        PRINT SPACE$(75)
      NEXT J
      GOTO Finished
    END IF
    GOSUB GetRoutName
      COLOR 1,0
      LOCATE L,2
      PRINT " ";Routine$
    GOSUB GetEntryAdd
      LOCATE L,25
      IF LEN(Address$(2)) = 1 THEN
        Address$(2) = "0" + Address$(2)
      END IF
      PRINT Address$(1);Address$(2)
    GOSUB GetRegInfo
      LOCATE L,35
      PRINT
    NEXT L
    COLOR 0,3
    LINE(386,173)-(612,185),3,bf
    LINE(388,174)-(610,184),0,b
    CALL Move&(Rp&,394,182)
    PRINT "F1 continues <> F10 aborts";
    WaitKey:
      In$ = INKEY$ : IF In$ = "" THEN WaitKey
      IF In$ = CHR$(138) THEN
        LINE(386,173)-(612,185),0,bf
        GOTO Finished
      END IF
      IF In$ <> CHR$(129) THEN WaitKey
      COLOR 1,0
      LINE(386,173)-(612,185),0,bf
  WEND
  GOTO Finished

GetRoutName:

  Routine$ = ""
  GOSUB GetChar
  WHILE Char$ <> CHR$(0)
    Routine$ = Routine$ + Char$
    GOSUB GetChar
  WEND
  IF LEN(Routine$) < 30 THEN
    Routine$ = Routine$ + SPACE$(21 - LEN(Routine$))
  END IF
  RETURN

GetEntryAdd:

  FOR ii = 1 TO 2
    GOSUB GetChar
    Address$(ii) = HEX$(ASC(Char$))
  NEXT ii
  RETURN

GetRegInfo:

  LOCATE L,35 : PRINT SPACE$(42);
  WHILE Char$ <> CHR$(0)
    GOSUB GetChar
    COLOR 2,0
    Register = ASC(Char$)
    GOSUB R1
  WEND
  IF fPrt THEN PRINT #4," "
  RETURN

GetChar:

  IF NOT EOF(1) THEN Char$ = INPUT$(1,1)
  RETURN

Finished:

  COLOR 3,0
  LOCATE 23,1
  PRINT SPACE$(78);
```

Continued on page 112

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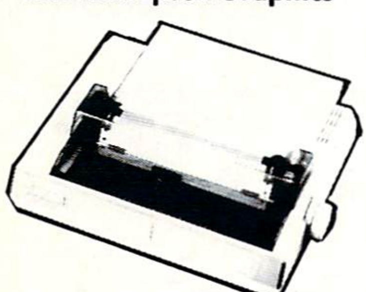
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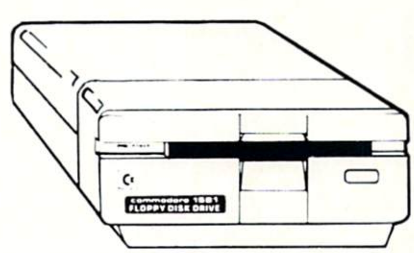
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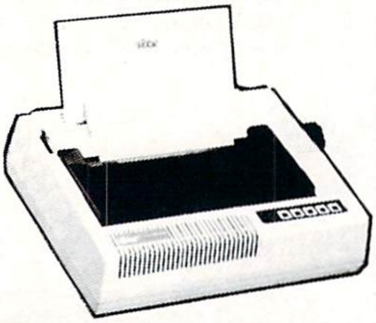
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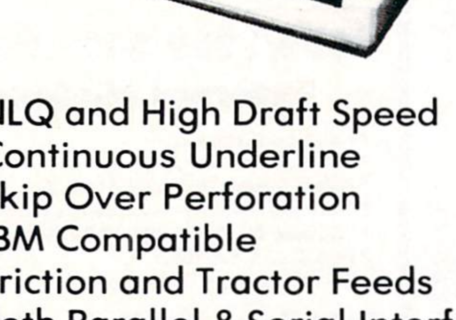
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VISA — MASTERCARD — C.O.D.

The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN, RIGHT2] would mean to press the cursor-down key once and then the cursor-right key twice. Note: Do not enter the commas.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The following chart tells you the keys to press for any word or words inside of brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to the keystrokes shows you what you will see on the screen.

SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "?Syntax Error Break In Line 270", type LIST 270 and press RETURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the "wrong" line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88) characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed (without a line number). Many people write that the computer gives them a syntax error when they type the line, or that the computer refuses to accept a line. Both of these problems are results of typing a line of more than 80 (or 88) characters.

"[HOME]" = UNSHIFTED CLR/ HOME	"[PURPLE]" = CONTROL 5	"[F1]" = F1
"[CLEAR]" = SHIFTED CLR/HOME	"[GREEN]" = CONTROL 6	"[F2]" = F2
"[DOWN]" = CURSOR DOWN	"[BLUE]" = CONTROL 7	"[F3]" = F3
"[UP]" = CURSOR UP	"[YELLOW]" = CONTROL 8	"[F4]" = F4
"[RIGHT]" = CURSOR RIGHT	"[ORANGE]" = COMMODORE 1	"[F5]" = F5
"[LEFT]" = CURSOR LEFT	"[BROWN]" = COMMODORE 2	"[F6]" = F6
"[RVS]" = CONTROL 9	"[L. RED]" = COMMODORE 3	"[F7]" = F7
"[RVOFF]" = CONTROL 0	"[GRAY1]" = COMMODORE 4	"[F8]" = F8
"[BLACK]" = CONTROL 1	"[GRAY2]" = COMMODORE 5	"[POUND]" = ENGLISH POUND
"[WHITE]" = CONTROL 2	"[L. GREEN]" = COMMODORE 6	"[SHFT ^]" = PI SYMBOL
"[RED]" = CONTROL 3	"[L. BLUE]" = COMMODORE 7	"[^]" = UP ARROW
"[CYAN]" = CONTROL 4	"[GRAY3]" = COMMODORE 8	

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,COMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPITITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]").

THE PROGRAM WON'T RUN!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is "running". Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

IF ALL ELSE FAILS

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program. The user group may also have the program on a library disk and be willing to make a copy for you.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase you understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program
The issue of the magazine it was in
The computer you are using
Any error messages and the line numbers
Anything displayed on the screen
A printout of your listing (if possible)

All of this information is helpful in answering your questions about why a program doesn't work. A letter that simply states "I get an error in line 250 whenever I run the program" doesn't give us much to go on. Send your questions to:

Commodore Magazine
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ATTN: Program Problem

Have fun with the programs!

HOW TO USE THE MAGAZINE ENTRY PROGRAMS

The Magazine Entry Programs on the next pages are two BASIC machine language programs that will assist you in entering the programs in this magazine correctly. There are versions for both the Commodore 64 and the Commodore 128. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 49900 (4864-5545 on the 128) and just lets you know that the program is running. If everything is ok, the program will finish running and say DONE. Then type NEW. If there is a problem with the data statements, the program will tell you where to find the problem. Otherwise the program will say "mistake in data statements." Check to see if commas are missing, or if you have used periods instead of commas. Also check the individual data items.

Once the program has run, it is in memory ready to go. To activate the program type SYS49152 (SYS4864 on the 128), and press RETURN. You are now ready to enter the programs from the magazine. To disable the Entry Program, just type KILL [RETURN] on the 64 or SYS4867 on the 128.

The checksums for each line are the same for both the 64 and 128, so you can enter your 64 programs on the 128 if you'd like.

Typing the Programs

All the BASIC program listings in this magazine that are for the 64 or 128 have an apostrophe followed by four letters at the end of the line (e.g., 'ACDF). If you plan to use the Magazine Entry Program to enter your programs, the apostrophe and letters **should** be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it **does not** enter that line into memory. This makes it impossible to enter a line incorrectly.

Error Messages and What They Mean

There are five error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

NO CHECKSUM: This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

QUOTE: This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

KEYWORD: This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT..) incorrectly. Check the line in the magazine again and check your spelling.

OF CHARACTERS: This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

UNIDENTIFIED: This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake.

The Magazine Entry Programs are available on disk, along with other programs in this magazine, for $9.95. To order, contact Loadstar at 1-800-831-2694.

```
10 PRINT"[CLEAR]POKING -";
20 P=49152 :REM $C000  (END AT
   49900/$C2EC)
30 READ A$:IF A$="END"THEN 110
40 L=ASC(MID$(A$,2,1))
50 H=ASC(MID$(A$,1,1))
60 L=L-48:IF L>9 THEN L=L-7
70 H=H-48:IF H>9 THEN H=H-7
80 PRINT"[HOME,RIGHT12]"P;
90 IF H>15 OR L>15 THEN PRINT
   :PRINT"DATA ERROR IN LINE";
   1000+INT((P-49152)/8):STOP
100 B=H*16+L:POKE P,B:T=T+B:P=P+1
   :GOTO 30
110 IF T<>86200 THEN PRINT
   :PRINT"MISTAKE IN DATA --> CHECK
   DATA STATEMENTS":END
120 PRINT"DONE":END
1000 DATA 4C,1F,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,0D,00,21
1002 DATA C1,27,C1,2F,C1,3F,C1,4C
1003 DATA C1,EA,EA,EA,4C,54,C0,A2
1004 DATA 05,BD,19,C0,95,73,CA,10
1005 DATA F8,60,60,A0,03,B9,00,02
1006 DATA D9,04,C1,D0,F5,88,10,F5
1007 DATA A0,05,B9,A2,E3,99,73,00
1008 DATA 88,10,F7,A9,00,8D,18,D4
1009 DATA 4C,EF,C0,E6,7A,D0,02,E6
1010 DATA 7B,4C,79,00,A5,9D,F0,F3
1011 DATA A5,7A,C9,FF,D0,ED,A5,7B
1012 DATA C9,01,D0,E7,20,2B,C0,AD
1013 DATA 00,02,20,74,C0,90,DC,A0
1014 DATA 00,4C,A9,C1,C9,30,30,06
1015 DATA C9,3A,10,02,38,60,18,60
1016 DATA C8,B1,7A,C9,20,D0,03,C8
1017 DATA D0,F7,B1,7A,60,18,C8,B1
1018 DATA 7A,F0,37,C9,22,F0,F5,6D
1019 DATA 03,C0,8D,03,C0,AD,04,C0
1020 DATA 69,00,8D,04,C0,4C,8E,C0
1021 DATA 18,6D,05,C0,8D,05,C0,90
1022 DATA 03,EE,06,C0,EE,09,C0,4C
1023 DATA CE,C1,18,6D,08,C0,8D,08
1024 DATA C0,90,03,EE,07,C0,EE,0A
1025 DATA C0,60,0A,A8,B9,0F,C0,85
1026 DATA FB,B9,10,C0,85,FC,A0,00
1027 DATA A9,12,20,D2,FF,B1,FB,F0
1028 DATA 06,20,D2,FF,C8,D0,F6,20
1029 DATA BC,C2,20,E4,FF,F0,FB,A0
1030 DATA 18,B9,08,C1,20,D2,FF,88
1031 DATA 10,F7,68,68,A9,00,8D,00
1032 DATA 02,4C,74,A4,4B,49,4C,4C
1033 DATA 91,91,0D,20,20,20,20,20
1034 DATA 20,20,20,20,20,20,20,20
1035 DATA 20,20,20,20,20,20,20,91
1036 DATA 0D,51,55,4F,54,45,00,4B
1037 DATA 45,59,57,4F,52,44,00,23
1038 DATA 20,4F,46,20,43,48,41,52
1039 DATA 41,43,54,45,52,53,00,55
1040 DATA 4E,49,44,45,4E,54,49,46
1041 DATA 49,45,44,00,4E,4F,20,43
1042 DATA 48,45,43,4B,53,55,4D,00
1043 DATA C8,B1,7A,D0,FB,84,FD,C0
1044 DATA 09,10,03,4C,84,C1,88,88
1045 DATA 88,88,88,B1,7A,C9,27,D0
1046 DATA 13,A9,00,91,7A,C8,A2,00
1047 DATA B1,7A,9D,3C,03,C8,E8,E0
1048 DATA 04,D0,F5,60,A9,04,4C,CA
1049 DATA C0,A0,00,B9,00,02,99,40
1050 DATA 03,F0,F0,C8,D0,F5,A0,00
1051 DATA B9,40,03,F0,E6,99,00,02
1052 DATA C8,D0,F5,20,96,C1,4C,12
1053 DATA C2,A0,09,A9,00,99,03,C0
1054 DATA 8D,3C,03,88,10,F7,A9,80
1055 DATA 85,02,A0,00,20,58,C1,20
1056 DATA 89,C1,20,ED,C1,E6,7A,E6
1057 DATA 7B,20,7C,A5,A0,00,20,80
1058 DATA C0,F0,D0,24,02,F0,06,4C
1059 DATA A8,C0,4C,CE,C1,C9,22,D0
1060 DATA 06,20,8D,C0,4C,CE,C1,20
1061 DATA BA,C0,4C,CE,C1,A0,00,B9
1062 DATA 00,02,20,74,C0,C8,90,0A
1063 DATA 18,6D,07,C0,8D,07,C0,4C
1064 DATA EF,C1,88,A2,00,B9,00,02
1065 DATA 9D,00,02,F0,04,E8,C8,D0
1066 DATA F4,60,18,AD,09,C0,69,41
1067 DATA 8D,09,C0,38,AD,0A,C0,E9
1068 DATA 19,90,06,8D,0A,C0,4C,1C
1069 DATA C2,AD,0A,C0,69,41,8D,0A
1070 DATA C0,AD,03,C0,6D,05,C0,48
1071 DATA AD,04,C0,6D,06,C0,8D,0C
1072 DATA C0,68,6D,08,C0,8D,0B,C0
1073 DATA AD,0C,C0,6D,07,C0,8D,0C
1074 DATA C0,38,E9,19,90,06,8D,0C
1075 DATA C0,4C,52,C2,AD,0C,C0,69
1076 DATA 41,8D,0C,C0,AD,0B,C0,E9
1077 DATA 19,90,06,8D,0B,C0,4C,67
1078 DATA C2,AD,0B,C0,69,41,8D,0B
1079 DATA C0,A0,01,AD,09,C0,CD,3C
1080 DATA 03,D0,20,C8,AD,0A,C0,CD
1081 DATA 3D,03,D0,17,C8,AD,0B,C0
1082 DATA CD,3E,03,D0,0E,AD,0C,C0
1083 DATA CD,3F,03,D0,06,20,CC,C2
1084 DATA 4C,4B,C0,98,48,68,4C,CA
1085 DATA C0,A9,20,8D,00,D4,8D,01
1086 DATA D4,A9,09,8D,05,D4,A9,0F
1087 DATA 8D,18,D4,60,20,A9,C2,A9
1088 DATA 81,20,DF,C2,A9,80,20,DF
1089 DATA C2,4C,D9,C2,20,A9,C2,A9
1090 DATA 11,20,DF,C2,A9,10,20,DF
1091 DATA C2,A9,00,8D,04,D4,60,8D
1092 DATA 04,D4,A2,70,A0,00,88,D0
1093 DATA FD,CA,D0,FA,60,END
```

END

```
5 TRAP 200
10 PRINT"[CLEAR]POKING -";
20 P=4864 :REM $1300  (END AT
   5545/$15A9)
30 READ A$:IF A$="END"THEN 110
80 PRINT"[HOME,RIGHT12]"P;
100 B=DEC(A$):POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>59382 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
200 PRINT:PRINT"DATA ERROR IN LINE";
    1000+INT((P-4864)/8):END
1000 DATA 4C,1E,13,4C,3A,13,00,00
1001 DATA 8E,00,F7,00,42,41,51,57
1002 DATA 0D,00,0D,43,08,14,0E,14
1003 DATA 16,14,26,14,33,14,A9,00
1004 DATA 8D,00,FF,AD,04,03,8D,12
1005 DATA 13,AD,05,03,8D,13,13,A2
1006 DATA 4A,A0,13,8E,04,03,8C,05
1007 DATA 03,60,AD,12,13,8D,04,03
1008 DATA AD,13,13,8D,05,03,60,6C
1009 DATA 12,13,A5,7F,D0,F9,AD,00
1010 DATA 02,20,5B,13,90,F1,A0,00
1011 DATA 4C,6F,14,C9,30,30,06,C9
1012 DATA 3A,10,02,38,60,18,60,C8
1013 DATA B1,3D,C9,20,D0,03,C8,D0
1014 DATA F7,B1,3D,60,18,C8,B1,3D
1015 DATA F0,35,C9,22,F0,F5,6D,06
1016 DATA 13,8D,06,13,AD,07,13,69
1017 DATA 00,8D,07,13,4C,75,13,18
1018 DATA 6D,08,13,8D,08,13,90,03
1019 DATA EE,09,13,EE,0C,13,60,18
1020 DATA 6D,0B,13,8D,0B,13,90,03
1021 DATA EE,0A,13,EE,0D,13,60,0A
1022 DATA A8,B9,14,13,85,FB,B9,15
1023 DATA 13,85,FC,A0,00,8C,00,FF
1024 DATA A9,12,20,D2,FF,B1,FB,F0
1025 DATA 06,20,D2,FF,C8,D0,F6,20
1026 DATA 79,15,20,A3,15,20,E4,FF
1027 DATA F0,FB,A0,1B,B9,EF,13,20
1028 DATA D2,FF,88,10,F7,68,68,A9
1029 DATA 00,8D,00,02,4C,B7,4D,91
1030 DATA 91,0D,20,20,20,20,20,20
1031 DATA 20,20,20,20,20,20,20,20
1032 DATA 20,20,20,20,20,20,91,0D
1033 DATA 51,55,4F,54,45,00,4B,45
1034 DATA 59,57,4F,52,44,00,23,20
1035 DATA 4F,46,20,43,48,41,52,41
1036 DATA 43,54,45,52,53,00,55,4E
1037 DATA 49,44,45,4E,54,49,46,49
1038 DATA 45,44,00,4E,4F,20,43,48
1039 DATA 45,43,4B,53,55,4D,00,C8
1040 DATA B1,3D,D0,FB,98,30,04,C9
1041 DATA 06,30,1E,88,88,88,88,88
1042 DATA B1,3D,C9,27,D0,13,A9,00
1043 DATA 91,3D,C8,A2,00,B1,3D,9D
1044 DATA 00,0B,C8,E8,E0,04,D0,F5
1045 DATA 60,4C,5C,15,4C,C5,14,A0
1046 DATA 09,A9,00,99,06,13,8D,00
1047 DATA 0B,88,10,F7,A9,80,85,FD
1048 DATA A0,00,20,3F,14,20,AE,14
1049 DATA 20,0D,43,84,FA,A0,FF,20
1050 DATA 67,13,F0,D8,24,FD,F0,06
1051 DATA 20,8F,13,4C,8F,14,C9,22
1052 DATA D0,06,20,74,13,4C,8F,14
1053 DATA 20,9F,13,4C,8F,14,A0,00
1054 DATA B9,00,02,20,5B,13,C8,90
1055 DATA 0A,18,6D,0A,13,8D,0A,13
1056 DATA 4C,B0,14,88,60,18,AD,0C
1057 DATA 13,69,41,8D,0C,13,38,AD
1058 DATA 0D,13,E9,19,90,06,8D,0D
1059 DATA 13,4C,CF,14,AD,0D,13,69
1060 DATA 41,8D,0D,13,AD,06,13,6D
1061 DATA 08,13,48,AD,07,13,6D,09
1062 DATA 13,8D,0F,13,68,6D,0B,13
1063 DATA 8D,0E,13,AD,0F,13,6D,0A
1064 DATA 13,8D,0F,13,38,E9,19,90
1065 DATA 06,8D,0F,13,4C,05,15,AD
1066 DATA 0F,13,69,41,8D,0F,13,AD
1067 DATA 0E,13,E9,19,90,06,8D,0E
1068 DATA 13,4C,1A,15,AD,0E,13,69
1069 DATA 41,8D,0E,13,A0,01,AD,0C
1070 DATA 13,CD,00,0B,D0,20,C8,AD
1071 DATA 0D,13,CD,01,0B,D0,17,C8
1072 DATA AD,0E,13,CD,02,0B,D0,0E
1073 DATA AD,0F,13,CD,03,0B,D0,06
1074 DATA 20,89,15,A4,FA,60,98,48
1075 DATA 68,4C,AF,13,A9,04,4C,AF
1076 DATA 13,A9,00,8D,00,FF,A9,20
1077 DATA 8D,00,D4,8D,01,D4,A9,09
1078 DATA 8D,05,D4,A9,0F,8D,18,D4
1079 DATA 60,20,61,15,A9,81,20,9C
1080 DATA 15,A9,80,20,9C,15,4C,96
1081 DATA 15,20,61,15,A9,11,20,9C
1082 DATA 15,A9,10,20,9C,15,A9,00
1083 DATA 8D,04,D4,60,8D,04,D4,A2
1084 DATA 70,A0,00,88,D0,FD,CA,D0
1085 DATA FA,60,END
```

END

Continued from page 103

```
  PRINT " Do you wish to examine another file (Y/N)?";
test:
  In$ = INKEY$ : IF In$ = "" THEN test
  IF UCASE$(In$) <> "Y" THEN
REM $IGNORE ON
    CLS : CLOSE 1 : LIBRARY CLOSE : WINDOW CLOSE 1
    WINDOW 1,"BmapReader",(0,0)-(617,186),15,-1
REM $IGNORE OFF
    END
  END IF
  GOTO Start
R1:

  IF Register < 1 THEN RETURN
  IF Register > 8 THEN R2
  IF fPrt THEN
    PRINT #4,CHR$(141);TAB(32 + (Register * 3));"#";
    RETURN
  END IF
  LOCATE L,(32 + (Register * 3))
  PRINT "#"
  RETURN
R2:

  IF fPrt THEN
    PRINT #4,CHR$(141);TAB(34 + (Register * 3));"#";
    RETURN
  END IF
  LOCATE L,(34 + (Register *3))
  PRINT "#"
  RETURN
Printer:

  OPEN "LPT1:BIN" FOR OUTPUT AS 4
  PRINT #4,CHR$(14);"Contents of file ";FileName$
  PRINT #4," "
  WHILE NOT EOF(1)
    PRINT #4," Routine Name"+SPACE$(9)+"Address";
    PRINT #4,  SPACE$(3);
    PRINT #4," d0 d1 d2 d3 d4 d5 d6 d7   a0 a1 a2 a3 a4"
    PRINT #4," ------------"+SPACE$(9)+"-------";
    PRINT #4,  SPACE$(3);
    PRINT #4," -- -- -- -- -- -- -- --   -- -- -- -- --"
     FOR L = 1 TO 54
     IF EOF(1) THEN
       PRINT #4,CHR$(12)
       CLOSE : fPrt = FALSE
       GOTO Finished
     END IF
     GOSUB GetRoutName
       PRINT #4," ";Routine$;
     GOSUB GetEntryAdd
       IF LEN(Address$(2)) = 1 THEN
         Address$(2) = "0" + Address$(2)
       END IF
       PRINT #4,"   ";Address$(1);Address$(2);
     GOSUB GetRegInfo
     NEXT L
     PRINT #4,CHR$(12)
  WEND
  PRINT #4,CHR$(12)
  CLOSE 4 : fPrt = FALSE
  GOTO Start

SUB FindFile(Nam$) STATIC
SHARED TRUE,FALSE,Okay

  Nam0$ = Nam$ + CHR$(0)
  fLock& = Lock&(SADD(Nam0$),-1)
  IF fLock& = 0 THEN
    UnLock&(fLock&)
    Okay = FALSE
    EXIT SUB
  END IF
  UnLock&(fLock&)
  Okay = TRUE
END SUB
SUB Delay(Secs&) STATIC

  Cur& = TIMER
  WHILE TIMER < Cur& + Secs& : WEND

END SUB
```

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When the Bard's scared sober, trust a thief

. . . like me.

When the Bard's Tale began, we lived a charmed life. Good ale. Good song. Good company. Mangar came along, but we cut him to pieces before he could blink. Soon the world got bigger, and its problems got bigger. We wandered the wilderness for months to find the pieces of that infernal Destiny Wand. But once we reforged it, Lagoth Zanta was history.

Back then, being a thief was dull. Pick this lock. Disarm that trap. When things got hot, they'd tell me "Into the shadows, wimp." I should've lifted their gold and split long ago. But it's too late now.

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